

U.S. Army Environmental Center
Environmental Technology Division
Edgewood Area
Aberdeen Proving Ground, Maryland

EVALUATION OF A
TRANSPORTABLE
HOT-GAS
DECONTAMINATION
SYSTEM FOR THE
DECONTAMINATION
OF EXPLOSIVESCONTAMINATED
DEBRIS & PIPING

VALIDATION TEST REPORT

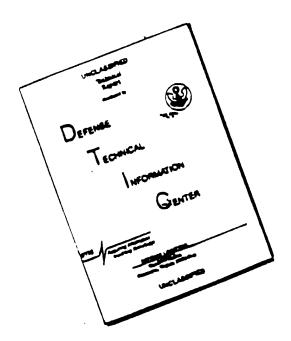
VOLUME III Appendices E-L



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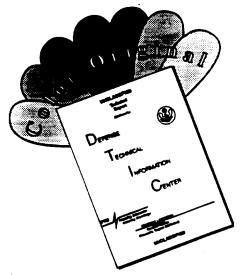
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VALIDATION TEST REPORT FOR THE TRANSPORTABLE HOT-GAS DECONTAMINATION SYSTEM USED TO SUPPORT THE DECONTAMINATION OF EXPLOSIVES-CONTAMINATED PIPING AND DEBRIS

VOLUME III: APPENDICES E-L

Contract No. DACA 31-91-D-0079 Task Order 12

Prepared for

U.S. ARMY ENVIRONMENTAL CENTER (USAEC)

SFIM-AEC-ETD
Edgewood Area
Aberdeen Proving Ground, MD 21010-5401

September 1996

DING QUALITY INSPECSES 8

Prepared by

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APPENDIX E

CONTROL ROOM LOGS FOR FURNACE RUNS 1-18

VALEDATION TEST#1 12#R SOAK

Soak Completion Time Total Scar Time Remaining 7:38 77.16 4;22 Sook Period 0132-0554

60:9 1:47

0700-0847

0908 + 551

1459 2;59PM

31 January = 1996 1634 Light Burner & furace 1753 Shutdown it AB. (High temp)? 1755 A-Born on 9822 F reached 200°F; 70% on & furne damper Started ramp@ 50°F/hr 1832

1832 Inlet " sample started 1834 Stack samples started 1834

Bleed Der Wanger on furnass noet al 1887 % open 0006

Approximate end for explosives trains @ stack and inter-0110 connecting clut.

- Remaining tests will end between 0110 and approf 030 - Ily Chone train completed. - All emissions testing 0126 completed except med soul period explosives train.

500°F Soal Time Started; Soal for 12 his 0132 Expected end of Soal 1:30 pm.

Reduce Bleed Air Damper from 50% to 45% 0323

Changed PID contlants in TIC-131 to reduce cycling in Afterbuner, 0315 Data will show a cycling reduced in NOx, 02, COz also.

Switched TE-203 & TE-204 at 3:53:14 to check ٥353 accuracy of transmitters checked usding 3:53:44 and then switched them back, Transmitters had some readings showing good codibrations.

Increased Bleed Air Damper from 45% to 50% 0420

Increased Bleed Damper to 60% 05Z0

Reduced Bleed Air to 50% 0538 Soak Time 4hr min BURNERS TRIP OFF AFTER BURNER RE LIT 0554 Lost Draft 0556 0610 LIT FURNACE Furnace Temp back to 500° Avg Tem 447° 0638 Start Inlet sampling Control Temp 526, Avg 4690 0644 0656 Arg Temp 499° Avg Temp 500° Re-start rock time, Souk Time Left & hr & min 0700 Expected End of soak time # 1438 Lost Burners High Tempin A-Burner 0847 Stop sampling, Stop soak teame 852 A-Burner relia 85% Furnace relit 901 Furnace Temp back to 500° 908 Avg Femp 500° 910 Restart sampling 1005 End inlet sampling 1348 End Soak period begin ramping downfurnacetemp 1354 Shut Furnace Burner off Shut down Afterburner

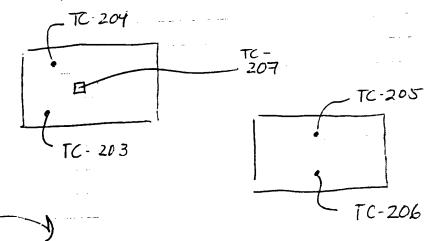
** NOx analyze was working erregularly during test fost test investigation indicated clog in sample line. NOx readings through jet fest seems possibly with fix incorrect and should not be relied on!

OPEN FURNACE DOOR TAG-OUT BURNERS

1430

1650

VALEDATION #2 Feb 2, 96



10:35 Roll call complete begin start-up
procedure
11:06 Start Logger
11:08 Start A-Burner Heat-up
11:28 A-Burner 1750
11:30 Light Fornace Begin Heat-Up
1300 Furnace Temp 250° Begin 50°/Hr
Ramp
1337 Jum unplugged TC 205 to veryly
functionally and/or pusince of a fragor
Shot, etcl.
1338 TC-205 plugged back; no sign of
fragor tear or TC line
1348 TC-205 unplugged; cleding transmitte
1348 TC-205 plugged back in

VALEDATION TEST #Z

	• • •
2 FEB	
1400	At approx. 1600 or before Furnace
, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	draft pressure was indicating post
•	Live ovessure, Duel pressure
•	that time was -, 10 and more
. -	o all a lighter was not shut
•	off, I cina had developed on the
~ .	off. I sing had developed on the low side of the draft transmitte
. .	Lake in d. Callon 6: Positive
ं के	Victor clearing the ice
·	Mya the turnace dratt reading
•	came back to negative
1700	Beain 6 Hr Soak period
	End of Soak 2500
1710	Begin lowering turnace selpoint flore
	4500 but maintaining Average martin
-	temp at 4000.
1724	Begin closing bleed air damper
	End Stack sampling
2100	End Soak period begin ramping
2300	End Soar period pesint ampi
2704	Shot Furnace burner off
2304	Shot After burner off, Furnace Temp 1990
<u>232l</u>	1 limb a caling a limber
3257	Shut ID Fan off, Fum. Temp 84° Turned Logger off
2332	Two ed Logaer off
<u> </u>	m Start of Furnaci to End of Sock Period 11 30 furnaci - 2300 ⇒ 690 min 11 hr 30 min
	11 30 humai - 2300 => 690 min
	11 ku 30 min

START AFTER BURNER TO WARM-UP SYSTEM SU DE OF THE LIE OPEN THE POOR AFTERBURNER = 600 F START FURNACE BURNER Started Post-Test Sampling for Validation Test #2 16°F outside; lite-snow 12:00 Jeff O'Neill & Jack Mills working on Stack Team Trailer Jeft : Jack planning on being back here Homorrow @ 7:00am Vu & Matt done post test sampling. Vu & Math Speking for Test #3.

Juinace tot plate will be Speked

W/ Tetyl. Vu & Math disse completed speling for _

VALEDATION TEST #3

a FEB 96 500/Hr Ramp, 5000 Ahr Soak

0728	Start Afterburner
0812	I LICHOLD
	Difficulties lighting furnace with
	- It weather
831	Furnace burner stayed lit
1000	Holding tempat 250° while taking care of icing problems with cooling
₹	water for probes
1300	D = = co/H= heat-UP
1406	Start Ais sampling on Stack and furnace, Fornace temp 3000
	and turnace, turnace temp sec
1854 †	Begin 4 hr soak Aug Temp 5000
2048	Complete Stack sampling
7106	Complete Furnace sampling
2106	End Soak Period begin stutting
<u> </u>	Furnace down
23.15	Shut Furnece off, begin cooling
2323	Chut After burner off, continue coeling
23	Shut ID fan off \$Logger_
<u> </u>	
Fru	m Start of turnace to End of Suak Period
·	m Start of furnace to End of Sock Period
	13 t 100 00 13 ku 42 min
	13W 12 11015

VALELATION TEST # 4

6 1 FEB, 96

18:50 START COMPUTER LOGGER 18:55 CALIBRATING CEM 21:30 LIT AFTERBURNER PROBLEM WITH FURNACE THE ANALYZER

VALEDATION TEST # 4

7 FEB.	96 LIT FURNACE BURINER PROGRAM CONTROL PROGRAMED FOR 250°F IN l'hr.
1800	Start of Soak Cycle.
1420	End Sock eyele. Adjust France setpoint to 200 F
1:00	jain & hunace burnace burner off.
1545	Juin-off Afterburner.
	VALEDATION TEST # 5
13.00	FURNACE LOACEC CALIBRATING CEM LIT SCC BURNER
23:22	30 Mill To 300°F Hhs 40 Min To (650°F (75°/hr)
	4 hr SOAK AT 650° 5 min To D'SETPOINT
	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
	

8 FEB .96 START SOAK CYCLE STOP SOAK START COOL DOWN' 0810 DURNER OFF CUT FURNACE 030 CUT AFTER BURNER OFF 1034 1037

VALADATION TEST #6

21
12.FEB 96
0757 START LOGIER
0802 LIT SCC BURNER
- 0000 MT 50000 DADISTT
09:57 LIT FURNACE BURNETZ
TEST #6 75 F hr RAMP, 600 F 2hr
Church TME n
10:06 Chilly FR SEASTE ON CHART RECORDER
10:06 Chilly FRE SCHIE ON CHART RECORDERS
FROM 600 F TO 700 F RAINGE
-1 + 1 / F + 1 / F / F / F / F / F / F / F / F / F /
10:45 MESMOCOUPLE IT AUSTINIONIN
T.M H. 1111/18 (1981/1V4
10:54 REPAIRED Short IN TREEMOCOUPLE TIT
205 PLUG
14:50 Aug. FURINACE TEMP. 600 F, STARTING
2 hr. soah Cycle
1650 2 hr SOAK SYCLE COMPLETE, START
Cook down
17.110 A - 15trpp. DEF
1740 CUT AFTERBURINER OFF
1743 ShUT DATALOGGER OFF

VALESATION TEST #7

		13 FEB, 96
	. منورد	COLOR DESCO DURNER HEAT, IIP
	'	
	16:20	LIT FURNACE BURNER, 100°F PER hr.
	16:26	LIT FURNALF DURIONA, I TOURIST
		RAMPUP, 600°F Ihr SOAK
	16:37	TIT-145 Rangewas changed from
		still looking at 0-1850 range.
,		
		be (logged number + 1850) x 2000
	-	11 1 Witten 100 Will De 15 3
	-	(1) 510-145 (0010)
	17:25	
		AVER PURCIFE TELLE CONTING DELOW TO
	3/13_	STAPT GOC SOAK TUR !
	2218	STOP SUAR: START COUL EURO
	0019	TURN FURNACE BULNER OFF
	0043	TURN AFTER BURNER OFF
	0045	SHUT DATA LOSSER OFF
:		
	1	
	1	
	-	
	T	
	T	
	1	
	†	

15 Fes 94 Validahir Test #8 Meff & Keviu start loading and spiking of the Pone Spiking Furnace LIT AFTER BURNER START FURNACE CHART RECORDER 1128 START FURNINGE BURINER, START
VALIDATION TEST #8, 100°F PER by
NAMPUP, 500°F 2 hr SOAK
FURNACE ANG. TEMP. 500°F, STARTING
Thr. SOAK CYCLE 1230 2 hr SOMK CYCLE COMPLETE, STARTING FORNACE COOL down ShUT OFF FURNACE BUPIDER FURNACE TEMP BELOW 200°F, Shut OF AFTERBURNER SHAT LOGSER OFF 2025

Valideton lest #9 Spike System, Unused Just Host H were added with otra acetone -05:15 Pore Spiking 191-EB96 TEST 49 100°F AN HOUR TO 600°F IMME 1200 START AFTER BURNER 1250 START FULNACE 1250 START CHART 1700 FURNICE DUK AFTER BURNER TRIP OFF HISH TEMP 1707 RELIT AFTER BURNER 1713 RELIT FURNACE 1731 RESTARTED RAMP 1908 FURNACE AND TEMP. 600 F, STARTING FURNACE 1918 Shut OFF FURNACE BURNER, WENT TO
100% ON BLEED AIR LAMPER
20:03 FURNACE TEMP. 193°F, Shut OFF
AFTERBURNER, ID FAN JAMPER 90%
2045 STEPPEL COMPUTER SHITH LOGICE

VALIDATION TEST # 10 20 FEB. 96 150°F he RAMPUP 550°F SOAK TEMP. 1 hr SDAK TIME START DATA LOGGER 18 47 LIT AFTERBURNER 1849 JIM H. BALIBRATING CEM 1900 START CHART RECORDER LIT FURNACE BURNER, STARTEL RAMP UP. FURNACE AUG. TEMP. 550°F, STARTING This. SOAK 27:3 21 FEB 96

21 FEB 960 0038 1 hr SOAK CYCLE COMPLETE, STARTING FURNACE COOL LOWN 0120 FURDACE TEMP. 193°F, STOPPED AFTERBURNER 0132 STOPPED COMPUTER LATA LOGGER 0547 START COMPUTER DATA LOGGER TO UNDATE THERMOLOUPLE TEMPS. STOP DATA LOGGER

TEST #11
22 FEB 96
150° hr ramp
400' SOAK FOR I HOUR
1000 START AFTER BURNER
1000 START DATA 2055ER
1001 START CHART RECORDER
1047 START FURNACE 1228 START SOAK I HOUR AT 400°
1328 1 HOUR SOAK TIME COMPLETE
START FURNACE COOL DOWN
1430 SHUT AFTIELBURNEIK.

VALIDATION TEST #12

·	
- 21	
26 FEB. 96	
11:50 LIT AFTERBURNER CHART RECORDER	
11:50 LIT MARIA LAGGER CHART RECORDER	-
	:
11:50 LIT AFTERBURNER CHART RECORDER 12:36 START DATA LOGGER BURNER	-
LIT FURNACE BORNEY	
12:36 START DAIN LOGGER BURNER 12:50 LIT FURNACE BURNER 12:50 LIT FURNACE BURNER	,
12:50 LIT FURNACE BURNER 12:50 LIT FURNACE BURNER 12:50 START 200°F LA RAMP-UP, 300°F	
o V Temo In. JOAK I'ME	•
START LOOP NO SOAK TIME SOAK TEMP, Ihr. SOAK TIME	-
monople / I starting t	ne
TT-100 was moved (prior to starting the	, ,
TT-100 was more Exchace Ex	· -
1) I measure que lo 11	, ±
TT-100 was moved (prior to sace Extent) to measure the Furnace Extent thin the interconnect do	
test) to measure the furnace of do Gas Temp within the interconnect do Gas Temp within the furnace shell.	
Gas The turnace shell	
gas Temp within the invace shell. approx. 10" from the fornace shell.	
approx. 10" from the torring the Atype K Tc was used and the	1
Alyper in accordance an	A —
1 Kam module was 12 pros	
A Type K TC was used and an A DAM module was reprogrammed an calibrated. Limit.	1
nolibrated. Am Car Circle	
2-0- 16 300 F SBATT	•
1111 FQ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
17, 50	8
- man/	` . II
17:5000K START FURNACE	
13-5000K COMPLETE I'M SOAK START FURNACE	
1558 COMPLETE I'M SOAK START FURNITURE	
1558 COMPLETE I'M SORK START FURNITUS COOL DOWN	
1558 COMPLETE I'M SORK START FURNITUS COOL DOWN	
1558 COMPLETE I'M SORK START FURNITUS COOL DOWN	
1558 COMPLETE I'M SORK START FURNITUS COOL DOWN COOL DOWN 1600 SHUT OFF FURNIKE Afternal	3
1558 COMPLETE I'M SORK START FURNITUS COOL DOWN 1600 SHUT OFF FURNACE Kackl Shut-Prov Affections Reckl Shut-Prov DECORDER OFF	
1558 COMPLETE I'M SORK START FURNITUS COOL DOWN 1600 SHUT OFF FURNACE Kackl Shut-Prov Affections Reckl Shut-Prov DECORDER OFF	
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1558 COMPLETE I'M SORK START FURNITUS COOL DOWN 1600 SHUT OFF FURNACE Kackl Shut-Prov Affections Reckl Shut-Prov DECORDER OFF	

TET# 13

-	08:06	START DATA LOGGER, LITE AFTERBURNER
	007	START DATA LOGGER, LITE AFTERBURNER 200°F INT RAMPLUP, 500°F SOAK TEMP,
+ -	08.39	START CHAPT RECORDER, LITE FURNACE
# * F12.38		KIRNER
ap: Fragus	1031	FURNACE AND TEMP, 500°F, START I hr.
#	1053	AFTER BURNER THERMO COUPLE TEMP.
1	<u></u> .	READING MALFUNCTIONING, SWITCHED CONTROLLER FROM AUTO TO MANUL
**	1153	Ihr. LOOK CYCLE COMPLETE, LOWERING
THE THE		FURINCE TEMP. RUPNER
	_ //,28	LOST AFTERBURNER TEMP. DUE TO high TEMP. RELIT AFTERBURNER BURNER
-	13 15	Shot LOWIN AFTERBURINER
	1500	
	1500	SHUT AFTERBURNER FAN OFF
	¹ 500	
	i500	
	'Soo	
	!500	
	¹ 500	
	<i>i500</i>	
	¹ 500	
	1500	
	1500	
	1500	

TEST # 12

28 FE 96 START DATA LOGGER, CHART RECORDED LIT FURNACE BURDER. 11:35 WENT TO AUTO - RUN ON FURNACE TEMP. 11:40 11:41 360°F KIL RAMP, 600 F SOAK TIME, CONTROLLER LOST FURNOACE BURDER JUE TO high I he SOAK CYCLE TEMP. (TEMP SPIKE LOST AFTERBURNER BURNER, LOW AFTERBURNER PRESSURE DUE TO FURINGLE BURNER LITING LOST FURINACE BURDER, high TEMPS LOST FURNACE BURDETZ, High TEMP. SPIKE FURNACE BURNER LUE TO bigh FURNACE AUG. TEMP- 600F, STATING TEMP. SPIKE 14:19 Ihr. SDAK CYCLE Ihr SOAK COMPLETE SHUT FURNACE BURNER OFF 15:19 15:25 SHUT OFF QXIDIZER 16:16 STUP CHART RECORDER 1717

TEST # 15

I MARCIN 96

LIT OXIDIZER 0805 DATA LOAGER 08:44 START CHART RECORDER 08:46 LIT FURNACE BURINER 08:47 START RAME-UP 300°F hr, 600°F SOAK, ILL SOAK CYELE Control, Record, & Hi-Limit TCs were moved prior to start-up to avoid local high temp, readings on Hi-Limit when explosive ___ spike material flashes. Location AFTER Location before Hilimit Control Record control Regard Hi-Limit Test Plate Chart recordernay indicate temp, spike if explosive material flashes LOST FURNIKE BURNER GUE TO high TEMP SPIKE, RELIT BURNER LOST FURNACE BURNER SUE TO high TEMP. SPIKE, RELIT BURDER FURNACE AUG. TEMP. GOO'F, START I W. Ihr SOAK COMPLETE, STARTING FURIVACE FURNACE TEMP. BELOW 200°F, STOPPED AFTER BURNER STOPPED DATH LOGGER

TEST # 16A & MARCH 96

Changes made prior to starting
, Furnace control thermocouple
TE-202 was moved from The FUTTACE
abumber and inserted into the
Eurnage exit duct in order to measure
and control based on exitags remp.
2 Thermocouple TE-100 Which was
measuring furnace exit gas temp,
was moved to measure ID fan Inlet
Bas Temp.
3. Stack NOx analyzer was moved
To the Interconnect Doc.
line and was sel-up to muse c
MIN BUTDON AT MOY
NO instead of NOx.
1 Internal bleed air duct was rotated
4. Internal bleed air duct was rotated 180° back to its original position.
4. Internal bleed air duct was rollied 180° back to its original position.
4. Internal bleed air duct was rotated 180° back to its original position. 1507 START AFTER BURNER
4. Internal bleed air duct was rotated 180° back to its original position. 1507 START AFTER BURNER TEST # 16 TNT SPIKE ONLY
4. Internal bleed air duct was rotated 180° back to its original position. 1507 START AFTER BURNER TEST # 16 TNT SPIKE ONLY
4. Internal bleed air duct was rotated 180° back to its original position. 1507 START AFTER BURNER TEST # 16 TNT SPIKE ONLY 600°F 300°F / HR RAMP NO SOAK TIME
4. Internal bleed air duct was rotated 180° back to its original position. 1507 START AFTER BURNER TEST # 16 TNT SPIKE ONLY 600° F 300° F / HR RAMP NO SOAK TIME 1514 10668 ON
4. Internal bleed air duct was rotated 180° back to its original position. 1507 START BFTER BURNER TEST # 16 TNT SPIKE ONLY 600° F 300° F HR RAMP NO SOAK TIME 1514 LOGGER ON 1520 START CHART RECORDER
4. Internal bleed air duct was rotated 180° back to its original position. 1507 START BFTER BURNER TEST # 16 TNT SPIKE ONLY 600° F 300° F MR RAMP NO SOAK TIME 1514 LOGGER ON 1520 STARTED FURNACE 1531 STARTED FURNACE
4. Internal bleed air duct was rotated 180° back to its original position. 1507 START BFTER BURNER TEST # 16 TNT SPIKE ONLY 600° F 300° F MR RAMP NO SOAK TIME 1514 LOGGER ON 1520 STARTED FURNACE 1531 STARTED FURNACE
4. Internal bleed air duct was rotated 180° back to its original position. 1507 START AFTER BURNER TEST # 16 TNT SPIKE ONLY 600° F 300° F HR RAMP NO SOAK TIME 1514 LOGGER ON 1520 STARTED FURNACE 1531 STARTED FURNACE 1532 START Tamp at 100° 1710 Material temp avg. 600° 1720 Shut-off Fornace
4. Internal bleed air duct was rollied 180° back to its original position. 1507 START AFTER BURNER TEST # 16 TNT SPIKE ONLY 600° F 300° F / HR RAMP NO SOAK TIME 1514 LOFFER ON 1520 START CHART RECORDER 1531 STARTED FURNACE 1532 START ramp at 100° 1710 Material temp avg. 600° 1720 Shut-off Fornace 1747 Shut-off After burner
4. Internal bleed air duct was rotated 180° back to its original position. 1507 START AFTER BURNER TEST # 16 TNT SPIKE ONLY 600° F 300° F HR RAMP NO SOAK TIME 1514 LOGGER ON 1520 STARTED FURNACE 1531 STARTED FURNACE 1532 START Tamp at 100° 1710 Material temp avg. 600° 1720 Shut-off Fornace

TEST 16B

1204 SPART GATA LOGGER

1206 START DXIDIZER

2230 LIT FURNACE BURNER START CHAPT RECORDS.

2231 START 300°F hr. RAMP-UP TO GOO'F

NO SOAK TIME

NO SOAK TIME

2351 FURNACE AVG. TEMP 601°F, SWITCHE.

FURNACE CONTROLLER FROM AUTO TO

FURNACE CONTROLLER FROM AUTO TO

MANUA, START LOWERING FURNACE

MANUA, START LOWERING FURNACE

354 STOPPED FURNACE BURNER,

2354 STOPPED OXIDIZER BURNER,

STOPPED ATTA LOGGER

TEST 16C

7 MARCH 96

1305 Start Datalogger Start Afterburner 1306 1321 Start Furnace 1325 Start Furnace Ramp@ 100° 1453 Avg temp 6000 to 1500 Begin cooling down

1502 STAPPED FURNACE BURNEIL

1538 STAPPED AFTERBURIDER, STAPPED SATA LOGGER

TEST 16 D 1947 START DATA LOGGER 1955 START AFTERBURNER START CHART RECORDER 2001 2008 LIT FORMACE 2012 START FURNACE RAMP @ 100°F 2141 AUG. TEMP. 600°F 2142 START FURNACE COOL LOWIN 2231 STOPPED AFTERBUKINER 2132 STOPPER A:THLOGGER

TEST#17A & MARCH 96

Started Logger 1052 Lit Afterburner 1056 Lit Furnace Started Ramp (3000/Hr) at 1000 1111 1294 Avg material Temp 6000, begin soux COMPLETED 2 HR SOAK START COOL DOWN 1445 STOPPER AFTERBURNER 1540 STOPPET SATALOGGER 1544 TEST 17B START CHATALOGGER START AFTERBURINER 1931 START CHART RECORDER 1847 1949 LITE FURNICE 1953 FURNACE TEMP. 1007, START 300°F/LL 2120 FURNACE AUG. TEMP. 600°F, START Ihr SOAK CYCLE

1220 The SOAK COMPLETE, STABT FORNACE

2004 down 2240 STOPFER AFTERBURINER -

TEST 17C

OBRT START DATALOGGER + AFTERBURNER OB 46 START CHART RECORDER OB 50 4 LIT FURNACE OF THE RAMP START 330°F / LA RAMP START 330°F / LA RAMP START 2LA SOAK CYCLE COMPLETE, START FARDACE COOLSOLUL FURNACE TEMP 195°F, STOP AFTERBURNER STAP DATA LOGGER

TEST 18. HOT DECON

1454 Lit Afterburner

1513 Lit Furnace

1514 Start Ramp (550°/14r) at 100°

1621 ALL FURINACE TEMP, REALINGS ABONE GOOF

START Zha SOAK CYCLE

1821 2km SOAK CYCLE

2001 BOWN

2001 BOWN

APPENDIX F

HOURLY DATALOGS FOR FURNACE RUNS 1-18

View/Inspection Ports CLOSED Record Gas (Instant) View System of Record Gas (Instant) View SSELECTRICAL All Lockout/Tagouts (1-5) are ACCOUNTED for. Furnace and Afterburner Control Breakers are ON. Verify Emergency Stop Pushbuttons are NOT ENGAGED BUMP Motors and switch to AUTO Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner LD Fan (M-158) Place Stack SNOX Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's SO2 Stack's THC Stack's THC Stack's CO	n returned to a perations. eld selector swi have been "Bl	Initialization of the same in "AUTUMPED" to verify
Inspection doors/manways are SECURED Inspection doors/manways are SECURED	Seek Temp: I valves, doors, in returned to a perations. I do selector swith have been "Bit Recorded"	inspection ports, position capable Initiali tches are in "AUT
Inspection doors/manways are SECURED Gas Valves OPEN View/Inspection Ports CLOSED Record Gas (Propose) All Lockout/Tagouts (1-5) are ACCOUNTED for. Furnace and Afterburner Control Breakers are ON. Verify Emergency Stop Pushbuttons are NOT ENGAGED BUMP Motors and switch to AUTO Verify Inspection Blower (M-130) Afterburner LD Fan (M-158) Place After burner LS with Tank Calibrate CEM Interconnecting Duct NOX Interconnecting Duct THC Stack's SO2 Stack's THC Stack's CO	I valves, doors, n returned to a perations.	inspection ports, position capable Initiali tches are in "AUT
Inspection doors manways are SECURED Gas Valves OPEN View/Inspection Ports CLOSED Record Gas (Layune Value SS) BLECTRICAL All Lockout/Tagouts (1-5) are ACCOUNTED for. Furnace and Afterburner Control Breakers are ON. Verify Emergency Stop Pushbuttons are NOT ENGAGED BUMP Motors and switch to AUTO Furnace Combustion Blower (M-130) Afterburner LD Fan (M-158) Afterburner LD Fan (M-158) Lace Stock's NOX Stack's NOX Stack's THC Stack's CO	n returned to a perations. eld selector swi have been "Bl	inspection ports, position capable Initiali tches are in "AUT
Inspection doors/manways are SECURED Gas Valves OPEN View/Inspection Ports CLOSED Record Gas (Layune Value SS) ELECTRICAL All Lockout/Tagouts (1-5) are ACCOUNTED for. Furnace and Afterburner Control Breakers are ON. Verify Emergency Stop Pushbuttons are NOT ENGAGED BUMP Motors and switch to AUTO Verify file all motors Afterburner Combustion Blower (M-130) Afterburner LD Fan (M-158) Calibrate CEM Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's THC Stack's CO	n returned to a perations. eld selector swi have been "Bl	position capable Initiali tches are in "AUT
View/Inspection Ports CLOSED Record Gas (Instant) View System of Record Gas (Instant) View SSELECTRICAL All Lockout/Tagouts (1-5) are ACCOUNTED for. Furnace and Afterburner Control Breakers are ON. Verify Emergency Stop Pushbuttons are NOT ENGAGED BUMP Motors and switch to AUTO Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner LD Fan (M-158) Place Stack SNOX Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's SO2 Stack's THC Stack's THC Stack's CO	n returned to a perations. eld selector swi have been "Bl	position capable Initiali tches are in "AUT
View/Inspection Ports CLOSED Record Gas (Private Vidua SS ELECTRICAL All Lockout/Tagouts (1-5) are ACCOUNTED for. Furnace and Afterburner Control Breakers are ON. Verify Emergency Stop Pushbuttons are NOT ENGAGED BUMP Motors and switch to AUTO Verify fie all motor Afterburner Combustion Blower (M-220) Afterburner LD Fan (M-158) Flace After June Suite Suite Salues Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's THC Stack's CO	eld selector swi have been "B	Initiali tches are in "AUT UMPED" to verify
All Lockout/Tagouts (1-5) are ACCOUNTED for. Furnace and Afterburner Control Breakers are ON. Verify Emergency Stop Pushbuttons are NOT ENGAGED BUMP Motors and switch to AUTO Verify fie all motor Afterburner Combustion Blower (M-220) Afterburner LD Fan (M-158) Flace of Calibrate CEM Interconnecting Duct NOX Interconnecting Duct THC Stack's THC Stack's THC Stack's CO	eld selector swi have been "Bl	tches are in "AUI UMPED" to verifj
All Lockout/Tagouts (1-5) are ACCOUNTED for. Furnace and Afterburner Control Breakers are ON. Verify Emergency Stop Pushbuttons are NOT ENGAGED BUMP Motors and switch to AUTO Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Calibrate CEM Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's THC Stack's CO	eld selector swi have been "Bl Recorded	tches are in "AUI UMPED" to verifj
Furnace and Afterburner Control Breakers are ON. Verify Emergency Stop Pushbuttons are NOT ENGAGED BUMP Motors and switch to AUTO Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner LD Fan (M-158) Flace of Lower Combuston Blower (M-130) Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's THC Stack's CO	have been "Bl	UMPED" to verify
Werify Emergency Stop Pushbuttons are NOT ENGAGED BUMP Motors and switch to AUTO Furnace Combustion Blower (M-220) Afterburner I.D Fan (M-158) Afterburner I.D Fan (M-158) Calibrate CEM Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's THC Stack's CO	have been "Bl	UMPED" to verify
BUMP Motors and switch to AUTO Furnace Combustion Blower (M-220) Verify fix all motors Afterburner Combustion Blower (M-130) Afterburner LD Fan (M-158) Calibrate CEM	have been "Bl	UMPED" to verify
Turnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Tank Calibrate CEM Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's THC Stack's CO	have been "Bl	UMPED" to verify
Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place of fee on 'N C Suitz Tank Calibrate CEM Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's THC Stack's CO	have been "Bl	UMPED" to verify
Afterburner I.D Fan (M-158) Calibrate CEM Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's THC Stack's CO	Recorded	
Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's SO2 Stack's THC Stack's CO		ustment (Y/N)
Interconnecting Duct THC Stack's NOX Stack's SO2 Stack's THC Stack's CO		
Stack's NOX Stack's SO2 Stack's THC Stack's GO	7.7	
Stack's SO2 Stack's THC Stack's GO		
Stack's GO		
Stack's 02		
Stack's CO	CLOSED	
** Verify that all regulators on Calibration Gas Tanks are Datalogger/Computer is ON	C <i>LUSED</i>	
13:42 Record Time (Computer Clock)		
21 " Francis Ambient Air Tomoratum (TIT 200)	,	
7. Ambient Humidity (call weather service @ 205 666 3010) record every 6 hours on data log sheet 945-7060 ANS Hack		•
CI3:00 Tacada arany o moura un data nog anada 113 100 100 100 100 100 100 100 100 100	nelete Losion Los	/
LOCK - GUT All Motors, Ex	lusion Log)
~ pibng		
ecure Egripmen Pad and Acc	_	dulch
conce eguipmen 1000 must after	en Ru	

LOADING/UNLOA	DINC /2 of 31	Test Number:		BI $A.l.$	
Deta: 1-31	(00000000000000000000000000000000000000	Ramp-Up Rate: Seak Time:			
Time: 1026		Seak Temp:			
,					
FIELD ACTIVITIES				hutial each item.	
/	Materials and Thermocouples	For each race	k/bin, provide a	description in	
<u> </u>	Cinder Block	 		e, moisture, etc.	
Rack A's Charac	eteristics. = 632 163.	** Refer to loading	procedures for Instructi	ions.	
Initial Wt.(lbs)	Final Wt.(lbs)	Test Materials	Initial Wt.(lbs)	Final Wt.(lbs)	
		Cardin SD	***		
		-			
1/62:	H	SD SD			
1160			11 11 1	- 	
+• Verifyspine in	we with manufactured wint	Take Pictures solveding to prevent pipes from rolling	into each other.	photograph cam	wanchen C
B Rack B's Charac	teristics. Steel pipe +		,	Ü	•
	= 483 165	Test Materials	initial Wt.(lbs)	Final Wt.(lbs)	
Total weight=1158 " IG I	Final Wt.(lbs)	SP SP	mitual W C.Jubsy	T HIGH TT L. INVOL	
Tota/weight=1158 # Initial WI. (105) 49 1 Buck + Skel= 974 4 hull LL = 483165.	//				
Buck + Skel= 974 - 104	<u> </u>	Clempline No. Vi De			
1 hul	ndel	34 SA			
ch = 48316s.		Take Pictures	Su N	lote about of	10
	eel Pipe, SC-Spiked Clay Pipe, SD-Spik	ed Cinder Blocks	-		0 .
	ated Steel Piep, CC-Cont. Clay Pipe, CL				
· · · · · · · · · · · · · · · · · · ·	of the two racks must be less than 3				
Mark Locations of T		ed into the furnace during any one bate:	h/load.		
Indix Essections of The					
	#4 in 8	cind	eraBlocks	Burner	
	JAHT!		_		
	Door Rack B	in sc	Rack A #6		
	7.3		-		
Pall Callabar Cidam	Furnaçe Door (Signatures req	Worify all site	personnel are d	accounted	
— V.,/ /\ X\	An inate pool (signatures red		rson initialized		
		Close and sec	ure furnace doc	or.	
		1.	/ /	Caibo S	inste
Secure Squipment P	ed and Access Read with Chai	n Links * (oup (ete:	Spike Soigh Shees	i^{j}
** SEE NEXT PAGE	FOR AFTERBURNER and FURN	ACE START-UP SEQUENCE	We	igh sheet	+

		Test Number:	
STA	RT-UP (3 of 3)	Ramp-Up Time: 50°/Hr	
Date		Seat Time: 12 Hours	
Time	14:17	Seak Temp: 500°	
AFTI	ERBURNER START-U	P Initial and record time for each item.	
₽Ħ	Start "I.D. Fan". Adjust fan sj	peed to maintain a system draft < -0.5 In. WC	
TH)	Start "Pre-Mix AIR BLOWER".	. Adjust fan speed to maintain <-0.5 In.WC	
	Start "OXIDIZER" (Burner). A	djust fan speed to maintain <-0.5 In.WC	
J	III	d, the control system will initiate a purge sequence.	
	The pilot will then attempt	to light the burner at low fire.	
#2	Start "DATALOGGER" Pushbu	ittons on the Computer.	
THIS IN	Heat-Up Burner to 1800 Deg. I	F. Adjust I.D. Fan speed to maintain < -0.5 In.WC	
•	@ 600 F: :Time	Once the burner is operating at low fire, the control will be released to the	
	@ 1200 F: :Time	The operator must adjust gas flow and I.D. fan speed to maintain temperat	
	@ 1800F: :Time	and system draft @ <-0.5 In WC.	
FUR	NACE START-UP	Initial and record time for each item.	
v=Nd		R" Position. Adjust ID fan speed to maintain < 0.5 In.WC	DANG 6759
M	Turn Furnace Key to "BLOWEI	R" Position. Adjust ID fan speed to maintain < 0.5 In.WC	to MANUA
K	Verify for "INTERLOCK OK" Li	ight is energized. Turn Furnace Key to "BURNER" Position. 「 らん つんりんー	to 0.0
	Once the burner has started	d, the control system will initiate a purge sequence.	
	17	to light the burner in low fire. E open Bleel an water to 1000	ת
14,223	Remn.lin Furnace Temperatau	re to SOAK Temperature. Maintain Ramp-Up Rate. Adjust ID Fan and Temperat	6
As		res during ramp-up on hourly datalog sheet	
		ng at low fire, the burner control will be released to the operator. The opera	
		-0.5 In.WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK te	
Lest	Manually Log Operating Paran	neters.	
1		UP, SOAK, and COOL-DOWN" log sheet to record all operating parameter	
	30 Minutes intervals. SOA.	K times and temperatures may vary from test to test.	
	** USE NEXT PAGE(S) TO LOS	G OPERATING PARAMETERS	
A44	r nount		
CUU	L-DOWN	Initialize and record time for each Hem.	

Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.

STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.

** FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.

1196 STOP "OXIDIZER" and "AIR BLOWER" = 31 JAN 96

Test House: T-1

Remp Up Acte: 50/ha

Book Time: 12 Hours

Book Tomp: 500 °F

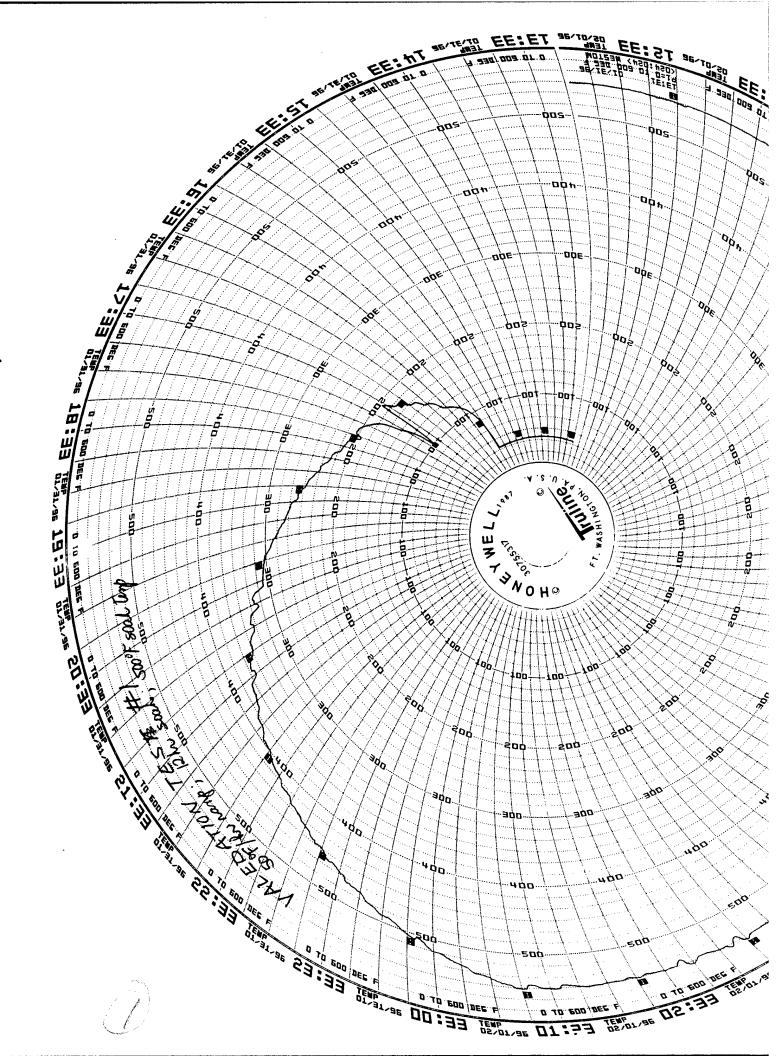
									****				,`	41,22 gr			
Tag	Description	Unit	13	× 1400	1500	1600	1700	1809	1900	2000	2100	3200			ļ	200	300 4
FURNAC	E .		Time:														
P1T-232	Fuel Gos Processes	in. WC		,16	-14	10	11.24	706	20,92	24.2	33.43	₹,95	1	41.26	40,95	3789	3893 3
FIT-231	Fuel Gas Flow	C FH	Actor	200	200	201	Ι"	200	175			169		1.67		168	168 1
PIT-222	Combustion Air Prossure	A.WC	0.	23.75	23.64	23.78	24.69	23.84	25,04	25,23	۵۲٬۷۱۰	25.15		25,49	25.42	25.36	25,37 2
RT-221	Combustion Air Flow	CFH		731	723	234	1514	742	1845	1952	2123	2164		2195	2192	2142	2155 2
P1T-188	Chamber Prosture	M.WC		-,32	-,32	-,31	-0.29	-, 31	-0,33	-0.32	-0,30	-0,29		-0.24	-0.34	-,48	-,48 -,
TIT-201	Recorder Temperature	Dog.F		38	38	37	122	105	223	268	373	422		473	524	550	5 44 5
√ TIT-202	Fernace Exit Gas Temp (Control)	Deg.F	<i>3</i> 7	38	37	37	124	102	225	271	376	426		477	527	546	5455
TIT-203	Material Thermocoupie #1	Deg.F		37	38	37	87	136	185	225	318	368		413			5165
11T-294	Metarial Thermocouple #2	DagLF		35	35	35	85	84	158		277	316		358			4664
TIT-205	Material Thormocouple #3	Deg.F		37	37	36	97	91	168	218	309	350		398	453	494	504 £
TIT-200	Material Thornecouple #4	Dag.F		38	31	37	97	137	203	251	350	401		450			527 5
F17-207	Material Thornecouple #5	Deg.F		38	37	37	110	95	201	245	347	396	-	442		_	527 5
AFTERB	VANER	Avg	v													504	507 5
√ ₁₁₇₋₁₃₁	Combuster Surner Temp. Control	Dept. F	1400	1753	1777	178/2	1834	1817	1808	1812	1707	1815		1820	1807	1819	1797 /
FIT-140	Fumoe Row	PAH	235.	3 ,53	238	2230	2296	420		:/	404	398		407	_	_	
PIT-151	Funce Pressure Fernace Draft)	MITC	,55	5 53	دی	153	0.60	0.60	0.64	0.67	0 .67	0.70		0.73	0.43	,38	39 2
T1T-145	Combuster Temperature	Dag. F		7 1746		1815	1838	1817	1613	1815	1818	1803		1818		1807	1800 18
P1T-133	Fuel Pressure	PSIG		84	280	.81	0.17	.84	0.68	0.66		0.60		040	0.13	.11	,16 ,
TIT-121	Fuel Gas Flow	CHASA	1103	5 1/02	1073	1070	1037	1101	946	9/8	855	872		750	590	596	606 5
CEM																	
NOx-B	Interesentating Duct NOx	A STATE OF THE STA		0,0	ه. ن	107.9	0.4	0.7	0,8	0.9	0.9	0.9		0.7	8.0	,9	1.0 .
THC-B	Interconnecting Duct THC	деп		10.0	-,4	-2.0	26.4	1.1	16.9	15.4	11.4	8.1		8.0	10.3	114	8.2 7
CO	Stacife CO	ppen [-,5	-,5	0	0 -	0.5	5,5	-0.5	-0,5	70.5		-0,5	-0.5	-,.5	-5 -
THC	· Stack's THC	ppm		1.6	.3	O	07	0.7	0.8	1.0	0,7	0.6		0.5	0.6	.8	1.0 ,
M Ox	Stack's NOx	ppm .		0.0	0,0	201,5	41.6	44.8	41,4	404	5.5	48.6		460	48.6	52.7	562 6
\$ 02	Stack 802	ppm		-2.0	7.5	401	0	-2.0	-1,5	- 1.5	<i>−J,</i> ∪	-1.5		-25	-2.5	-2,0	7.0 -
72	Stack's 02	*		12.6	10.28	. 0.5	12.55	12.05	12,22	12.27	11.88	11.70		12.13	ાા.હે	11.4	11.32/2
-02	Stacil's CO2	*		<i>i</i> 0	,10	D	5.66	5.78	5,60	5.62	5,54	5.91		5.70	5.98	5,72	6.16 5
T17-300	Ambient Temp	Dog. F		54	35	34	32	32	32	32		35	1	32	32	32	32 3
Wasther Service	Relative Humidity			8/%								84		_			
		0								· · · · · · · · · · · · · · · · · · ·							

(12.)

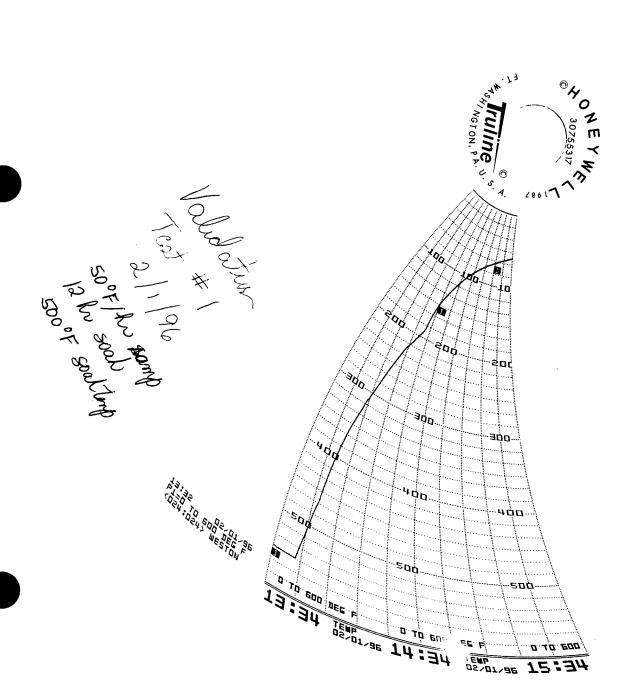
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80 2501 2542 23.35 88 2015 688 561 6 745 751 71.00 9 549 231 101 12 552 2 30 99 12 521 536 12.5 0 422 333 211 6 517 295 16.7 81 530 299 11.9 84 535 225 99 18 519 136 89 180 1752 249 199 1820 1757 2.44 199 1820 1757 1.08 17 67 85 .01 18 2 461 1097 1	<i>1</i> 5	2451	<u>,40</u>	2.19														
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6 36 137 2.44 6 36 137 2.44 6 36 157 1.08 7 .07 .05 .01 6 2 461 1097 1 6 .2 -2.3 -16 1.4 6 .8 .0 .4 6 .9 .0 .4 7 .7 .7 .5 .5 8 .8 .0 .0 10 -3.5 -5.6 -6.5 9 1252 1382 2130 2 5.22 462 .02	99	1901	1752	አዛኝ														L
9 1820 1757 208 17 .07 .85 .01 182 246 1097 1 183 .8 .6 .6 182 2.3 -16 1.4 185 -,5 -,5 .5 18 .8 1.0 .4 19 1471 393 -1.0 10 -3.5 -5.6 -6.5 19 1252 1382 21.30 2 5.22 462 .02	<u>-</u>	_	_	_														
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2.2 -2.3 -16 1.4 5 -,5 -,5 .5 8 .8 1.0 .4 11 47.7 39.3 -1.0 10 -3.5 -5.6 -6.5 9 12.52 1382 21.30 2 5,22 412 .02		a	1.	. (
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NOx Cal Sheet

Post Test #1 - Pre test #2
2/1/96

		Test Number:	
re -	START-UP (1 of 3)	Ramp-Up Time 50°F/h after	, 200
	Date: Feb- 2 1996	Soak Time: 6 huo	
	Time: Started, 11:00 am	Soak Temp: 400° F	
	afterlune_		
	V		000000000000
ECI	HANICAL	Initial each	item.
	Inspection doors/manways are SECURED	Verify all valves, doors, inspection ports, manw	ay, etc
IA ·	Gas Valves OPEN	have been returned to a position capable of sus	taining
7 77.			
*	View/Inspection Ports CLOSED	system operations.	
LEC	TRICAL	Initialize each	item.
\mathcal{L}	All Lockout/Tagouts (1-5) are ACCOUNTED for.	•	
\neg	Furnace and Afterburner Control Breakers are	ON.	
7.7	W. M. E. Or. D. H		
	Verify Emergency Stop Pushbuttons are NOT	ENGAGED	
	Verify Emergency Stop Pushbuttons are NOT BUMP Motors and switch to AUTO	ENGAGED	
	BUMP Motors and switch to AUTO		ter
		Verify field selector switches are in "AUTO" afticall motor have been "BUMPED" to verify operations.	
	BUMP Motors and switch to AUTO Furnace Combustion Blower (M-220)	Verify field selector switches are in "AUTO" aft all motor have been "BUMPED" to verify opera	
	Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158)	Verify field selector switches are in "AUTO" aft all motor have been "BUMPED" to verify operations. Tank Recorded	
	Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130)	Verify field selector switches are in "AUTO" aft all motor have been "BUMPED" to verify opera	
	Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158)	Verify field selector switches are in "AUTO" after all motor have been "BUMPED" to verify operations. Tank Recorded Values Adjustment (Y/N)	
	Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Calibrate CEM	Verify field selector switches are in "AUTO" after all motor have been "BUMPED" to verify operations. Tank Recorded Values Adjustment (Y/N)	
田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田	Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Calibrate CEM Interconnecting Duct NOX	Verify field selector switches are in "AUTO" after all motor have been "BUMPED" to verify operations. Tank Recorded Values Values Adjustment (Y/N) 204.1 204 4 608 60	
	BUMP Motors and switch to AUTO Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Calibrate CEM Interconnecting Duct NOX Interconnecting Duct THC	Verify field selector switches are in "AUTO" after all motor have been "BUMPED" to verify operations. Tank Recorded Values Values Adjustment (Y/N)	
田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田田	Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Calibrate CEM Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX	Verify field selector switches are in "AUTO" after all motor have been "BUMPED" to verify operations. Tank Recorded Values Values Adjustment (Y/N) 204./ 204 /	
	Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Calibrate CEM Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's SO2	Verify field selector switches are in "AUTO" after all motor have been "BUMPED" to verify operations. Tank Recorded Values Values Adjustment (Y/N) 204./ 204 / / / / / / / / / / / / / / / / / / /	
	Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Calibrate CEM Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's SO2 Stack's THC	Verify field selector switches are in "AUTO" after all motor have been "BUMPED" to verify operations. Tank Recorded Values Adjustment (Y/N) 204./ 204 / / / / / / / / / / / / / / / / / / /	
	Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Calibrate CEM Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's THC Stack's CO	Verify field selector switches are in "AUTO" after all motor have been "BUMPED" to verify operations. Tank Recorded Values Values Adjustment (Y/N) 204.1 204	
	Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Calibrate CEM Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's SO2 Stack's THC Stack's CO Stack's CO Stack's CO	Verify field selector switches are in "AUTO" after all motor have been "BUMPED" to verify operations. Tank Recorded Values Adjustment (Y/N) 204.1 204	
	Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Calibrate CEM Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's SO2 Stack's THC Stack's CO Stack's O2	Verify field selector switches are in "AUTO" after all motor have been "BUMPED" to verify operations. Tank Recorded Values Adjustment (Y/N) 204.1 204	
图	Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Calibrate CEM Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's NOX Stack's THC Stack's CO Stack's CO ** Verify that all regulators on Calibratio Datalogger/Computer is ON	Verify field selector switches are in "AUTO" after all motor have been "BUMPED" to verify operations. Tank Recorded Values Adjustment (Y/N) 204.1 204	
	BUMP Motors and switch to AUTO Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Calibrate CEM Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's NOX Stack's THC Stack's CO Stack's CO Stack's CO ** Verify that all regulators on Calibratio Datalogger/Computer is ON \$\sumeq 0\$ Record Time (Computer Clock)	Verify field selector switches are in "AUTO" after all motor have been "BUMPED" to verify operations. Tank Recorded Values Adjustment (Y/N) 204.1 204	
图	Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Calibrate CEM Interconnecting Duct NOX Interconnecting Duct THC Stack's NOX Stack's NOX Stack's THC Stack's CO Stack's CO ** Verify that all regulators on Calibratio Datalogger/Computer is ON	Verify field selector switches are in "AUTO" after all motor have been "BUMPED" to verify operations. Tank Recorded Values Values Adjustment (Y/N) 204.1 204 4 204.204 4 399.9 399 11 400.8 40 4 400.5 399 11 19 19.1 11 on Gas Tanks are CLOSED	

DADING/UNLOADING (2 of 3) Date: 2 feb- 96 Time:	Ramp-Up Rate: Soak Time: Soak Temp: For each rack/b	50°F/ 6 km 400°	Initial ea ch item
Rack A's Characteristics. * Scale dues not work) · · · · · · · · · · · · · · · · · · ·	ts, appearance, mois g procedures for Insh	
Initial Wt.(lbs) Final Wt.(lbs)	<u>Materials</u>	Initial Wt.(lbs)	Final W 1.(l bs)
** Secure pipe to prevent pipes from rolling	Take Pictures		
Rack B's Characteristics. A Scale does Not work. Initial Wt.(lbs) Final Wt.(lbs)	<u>Materials</u>	Initial Wt.(lbs)	Final Wt.(Ibs)
** SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Clay CP-Comtaminated Steel Piep, CC-Conf. Clay Pipe, CD-C Total Weight of the two racks must be less than 3,000 Lbs. Mark Locations of Thermocouples	Cont. Debris	#5	Burner
Roll Calls and Close Furnace Door Ruly Character T	Verify all site p	Rack A ersonnel are account on initial this checking the furnace door.	
Complete Spike Sample Weigh Sheet			

	17-UP (3 of 3)	Rmp-Up Time: 50 F per hour
Date. Time	2 Feb 96	Rmp-Up Time: 50°F per hour Soak Time: 6 kr Soak Temp: 400°F
AFTE	RBURNER START-UP	Initial and record time for each iter
H	Start "I.D. FAN". Adjust far	n speed to maintain a system draft < -0.5 In. WC
H.	Start "Pre-Mix AIR BLOWER	l". Adjust fan speed to maintain <-0.5 In.WC
E.	Start "OXIDIZER" (Burner).	Adjust fan speed to maintain <-0.5 In.WC
J	Once the burner has started, to	he control system will initiate a purge sequence.
	The pilot will then attempt to i	ight the burner at low fire.
H.	Start "DATALOGGER" Push	buttons on the Computer.
TH.	Warm-Up Burner up to 18	00 Deg. F. Adjust fan speed to maintain <-0.5 in.WC
7	@ 600 F: :Time	Once the burner is at low fire, burner control will be released to the operator.
	@ 1200 F: :Time	The operator must adjust gas flow and ID fan speed to maintain temperature
	@ 1800F: :Time	1800°F and system draft @ <-0.5 In WC.
URN	IACE START-UP	Initial and record time for each ite
#	Set Bleed Air Damper to 7	/ 5%
THE	·	WER" Position. Adjust ID fan speed to maintain <-0.5 In.WC
狀	•	L". Set controller output to 0.0
用。用	Turn Furnace Key to "BURI	•
	Verity "INTERLOCK OK" Lig	
	ll .	control system will initiate a purge sequence.
	The pilot will then attempt to	igni the burner at low fire.
	Open Bleed Air Valve to	100%
144	• •	to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.
)		tures during ramp-up hourly, on the control room log sheet.
	#	at low fire, burner control will be released to the operator. The operator must adjust
	μD fan speed to maintain <-0.	5 In.WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature.
H	Manually Log Operating	Parameters.
H		
Ħ	Use the attached Log Sheet to	Parameters. record all operating parameters at least hourly. TURES will vary from test to test.
扭	Use the attached Log Sheet to SOAK TIMES and TEMPERA	record all operating parameters at least hourly.
C00T	Use the attached Log Sheet to SOAK TIMES and TEMPERA	record all operating parameters at least hourly. TURES will vary from test to test.
COOT	Use the attached Log Sheet to SOAK TIMES and TEMPERA SOURCE NEXT PAGE(S) TO L L-DOWN	record all operating parameters at least hourly. TURES will vary from test to test. OG OPERATING PARAMETERS Initial and record time for each ite
COOT	Use the attached Log Sheet to SOAK TIMES and TEMPERA SOURCE NEXT PAGE(S) TO L L-DOWN Turn furnace Key to "BLO"	record all operating parameters at least hourly. TURES will vary from test to test. OG OPERATING PARAMETERS Initial and record time for each ite WER" After lowering Furnace Temp to 200 Deg. F.
	Use the attached Log Sheet to SOAK TIMES and TEMPERA SOURCE NEXT PAGE(S) TO LE L-DOWN Turn furnace Key to "BLO" STOP "OXIDIZER" and "AIR	record all operating parameters at least hourly. TURES will vary from test to test. OG OPERATING PARAMETERS Initial and record time for each ite WER" After lowering Furnace Temp to 200 Deg. F.

HOURES		ALOG	<u>(</u>	
Date: _	2 F	=eb	9	
7me:				

Tool Number: T2

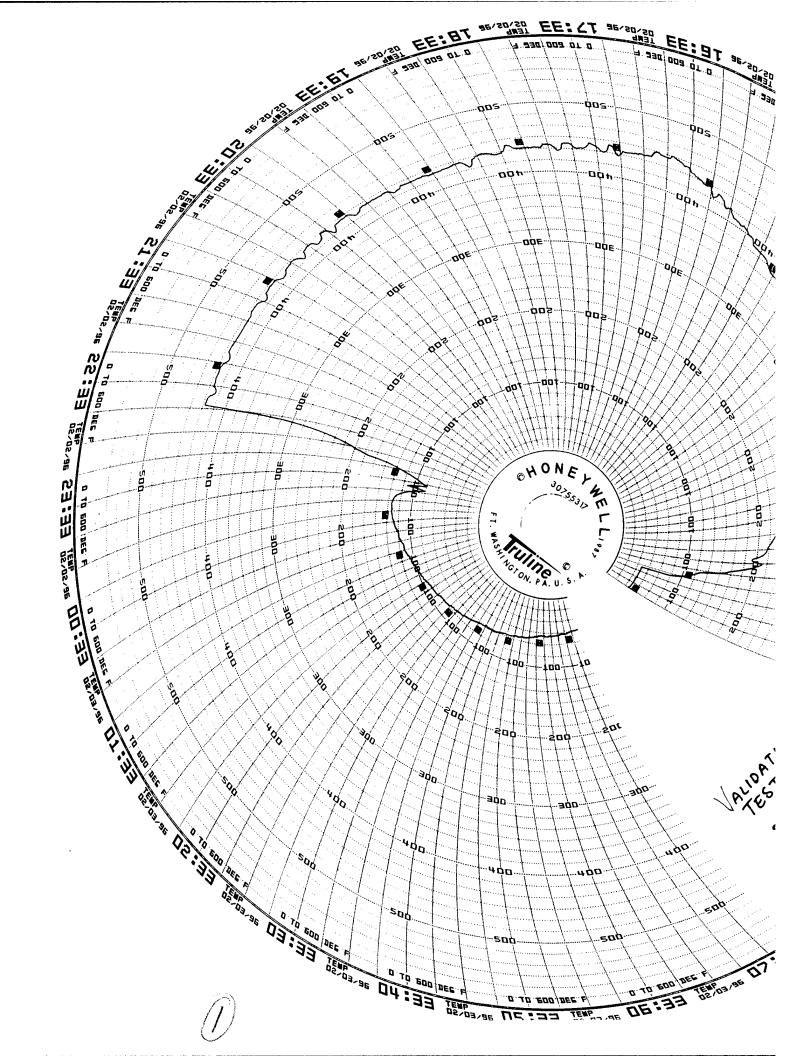
Ramp-Up Rote: 500/Hr

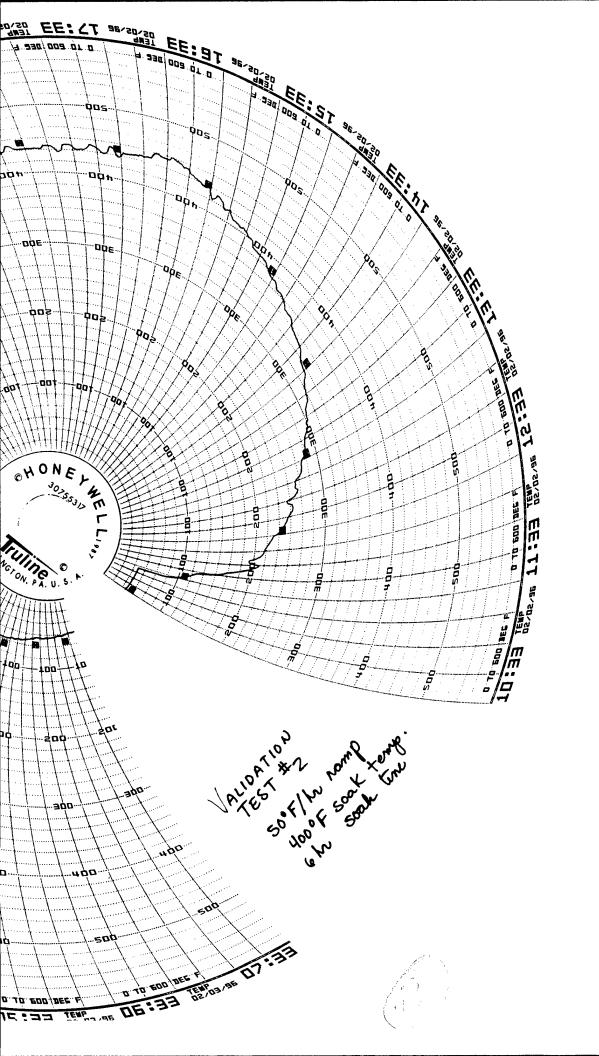
Book Time: 6-Nr

Book Tomp: 400°F

Tag	Description	Unit		1200	130	01460	1500	1600	1700	1800	1900	2000	2100	2200	2300	0000		
=:0440	-	- 1	Time:															
FURNACE	•			1	1	T	1		Τ	1	Γ	Γ.	1	I	ī	· · ·		
P1T-232	Fuel Gas Prossure	M.WC		22,45	19.2	243	27.2		1	30,2	2196	26,21	2811	264	27.6			-
FIT-231	Fuel Gas Flow	CAH		30	29	31	32	32	-2	-1	1	4	8	//	12			<u> </u>
PIT- 22 2	Combustion Air Prossure	M.WC		24.82	24.97	25,02	25/6	2533	25A7	25,4	25,4	25.41	259	25.4	256			<u> </u>
RT-221	Combustion Air Flow	CAN		10822	10936	10750	1060	10559	0552	10645	16792	10853	10798	10888	10849			_
P1T-158	Chamber Processes	A.WC		-38	28	,35	05	,37	260	46	72	-,73	7.73	7/	-,71			
N7-201	Recerder Temperature	Dog.F		197	246	303	348	405	450	435	434	424	429	429	430			<u> </u>
NT- 20 2	Fernece Exit Gas Temp (Control)	Dog.F		200	248	304	350	401	451	438	437	427	432	431	433			
NT- 20 3	Meterial Thormocoupie #1	Day.F		154	223	273	323	366	469	408	4/3	403	408	406	407			
TT-284	Motorial Thermocouple #2	Dag.F		165	217	269	312	360	404	401	405	398	404	403	405			_
TIT- 20 5	Material Thermocouple #3	Deg.F		117	87	232	272	327	379	397	405	404	405	407	40 8			<u> </u>
NT-206	Material Thermocouple #4	Dag.F		158	228	279	325	372	419	415	\$ 17	409	412	411	411			
9T- 20 7	Material Thermocouple #5	Dag.F		181		289									416		L	
A <i>FTERBUI</i>	Avg			155	217	268	3/3	362	408	406	412	404	409	407	409			
ur i erbui	MAEA			Γ		I	 			[Γ		T
NT-131	Combustor Burner Temp. Control	Dag. F		1816	1804	BIC	1802	1798	1805	1803	K 05	1802	1835	1926	1822			
TT-148	Funnes Flow PP#	-cfi		_	_			_	1	—	_	1		1	-			-
17-161	Funnes Procesure (Furnesse-Brefit)	MIC		.51	,59	اکر	.40			,37					,29			-
17-145	Combustor Temperature	Dag. F		1821	1811	88	1832	1809	1812	1806			1810	1912	1809			-
MT-133	Fuel Pressure	PSIG		1	,50	,45	•33			.14		,14	•17	.16	.17		<u> </u>	ļ
NT-121	Fuel See Flow CFH	CFM		909	811	769	651	767	636	605	605	601	645	610	456			
EM																		
	A			12	15	8,1	20	2 -	7 Q	1 R	1.3	1.0	12	, ,	1.2			Π
10x-8	Interconnecting Duct NOx	ppm m				60.2												\vdash
NC-B	Interconnecting Duct THC	ppm .																 T
0	Stacife CO	ppm				-,5						-,5	5	5	-,5			-
NC .	Stack's THC	ppm .				2,2			•		,3	,3	-8		,7			<u> </u>
Ox	Stack's NOx	ppm .		47.9	<i>ط.53</i>	53.8	51.8	<i>W</i> .3	59,9	61.1	64.6	726	725	72.6	<i>5</i> 83			_
02	Stack 802	p pm		4,5	5.0	4,5	4.0	3.5	2.5	1.0	,5	1,0	2.5	2.5	2.5			
र	Stack's 02	*		11.5	8.11	77,11	12.15	11.7	11,75	11.73	1207	11.8	10.65	10.42	13,22			
02	Stack's CO2	*		5.9	51&	5,74	5. <i>5</i> 8	582	5,90	598	5,58	5,46	6.60	6.66	6.18			
17-300	Ambient Temp	Dog. F		37	36	36	34	33	33	22.7		25.7	24.8	25.3				
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6	126	<i>725</i>	726	<i>5</i> 83																				
	1,0	2.5	2.5	2.5																				
7	1.8	10.65	10.42	13,22			!											 						_
8	5,46	6.60	6.66	6,18																				L
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9	1.9	22.3	89.9						1															L





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	Test Number: 3
Pre - START-UP (1 of 3)	Ramp-Up Rate: 50°/HR
Date: 4 Feb 96	Soak Time: 4 Hrs
Time:	Soak Temp: 500°
The state of the s	
MECHANICAL	Initial each item.
Inspection doors/manways are SECURED	Verify all valves, doors, inspection ports, manway, etc.
Ras Valves OPEN	have been returned to a position capable of sustaining
View/Inspection Ports CLOSED	system operations.
Record Gas (Propane) Valve Position	80%
ELECTRICAL	Initial each item.
All Lockout/Tagouts (1-5) are ACCOUNTED).
Furnace and Afterburner Control Breakers	are ON.
Verify Emergency Pushbuttons are NOT EN	GAGED.
BUMP Motors and switch to "AUTO"	
Furnace Combustion Blower (M-220)	l'erify field selector switches are in ".11 TO" after
Afterburner Combustion Blower (M-130)	all motors have been "BUMPED" to verify operations.
Afterburner I.D Fan (M-158)	
Place Afterburner Switch in REMOTE	
Calibrate CEM	Tank Recorded Adjustment (Y/N) Values Values
✓Interconnecting Duct - NOx	204
Interconnecting Duct - THC	204.1 2752
	77.3 pto 3
Stack NOx Stack SO2	204, 209 N
Stack THC	399 993
	91.5 90 Y
	43/.7.43/
Stack CO	437.4 440 X
** Verify that all regulators for Calibration Gas To	anks are CLOSED
Datalogger/Computer is ON	
Record Time (Computer Clock)	
Record Ambient Temperature (TIT-300)	•
Record Ambient Humidity (call Weather Servi	ice 664-3010 or 945-7000)
Pre - Spike Activities	
Lock-out all Motors; Complete Exclusion Log	
Secure Equipment Pad and Access Road w/ C	Chains ·
Spike Test Materials and Furnace Test Plates	

DADING/UNLOADING (2 of 3) Date: Feb 4 96 Time:	Test Number Ramp-Up Rate: Soak Time: Soak Temp:	50°/ 4 Hr 500°	
ELD ACTIVITIES			Initial each item
Load Furnace with Materials and Thermocouples	For each rack bin	provide a descri	ption in
Load fornace with marches and months of pro-	terms of contents,	•	<u>-</u> '
Rack A's Charactenstics.	** Refer to loading ;	procedures for Insh	ructions.
RACKS	±14		
Initial Wt.(lbs) Final Wt.(lbs)	Materials	Initial Wt.(lbs)	Final Wt.(lbs)
SCALE NOT WORKING			
SPXES	× <u>X</u>		
** Secure pipe to prevent pipes from rolling	Take Pictures		
•••			
Rack B's Characteristics.	46	TNT SPICE	
Initial Wt.(lbs) Final Wt.(lbs)	Materials	Initial Wt.(lbs)	Final Wt.(lbs)
SCALE NOT WORKINGS (0 0 0		
ROX SOIRE (Take Pictures		
SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked C	inder Blocks		
CP-Comtaminated Steel Piep, CC-Cont. Clay Pipe, CD-			
/ Total Weight of the two racks must be less than 3,000 Lb.			
Mark Locations of Thermocouples			Burner
ON TET SOIKE SOMELY	2		:
Door Rack B		ack A	
	42 80 80 80 40 80 40 80 80 80 80 80 80 80 80 80 80 80 80 80	41. 3 · /su : : : : : : : : : : : : : : : : : : :	200
Roll Calls and Close Furnage Door	Verify all site pers	sonnel are accour	nted for.
Harm 2 / medini A	Have each person		
Mathe Mulling	Close and secure		-
Complete Spike Sample Weigh Sheet			
** SEE NEXT PAGE FOR AFTERBURNER and FURNACE ST			

Test #T3

	T-UP (3 of 3)		Rmp-Up Time:				
	: <u>4 Feb 96</u>		Soak Time: Soak Temp:	9 Hrs 500°			
		 	-				
AFTE	RBURNER START-UP			Initial and record time for each item.			
TH.	Start "I.D. FAN". Adjust fan	•	•				
##	Start "Pre-Mix AIR BLOWER"						
B.H.	Start "OXIDIZER" (Burner).						
,	Once the burner has started, the The pilot will then attempt to light	•		uence.			
色	Start "DATALOGGER" Pushb	outtons on the Cor	nputer.				
TEJ,	Warm-Up Burner up to 180	0 Deg. F. Adjust fo	an speed to mai	ntain <-0.5 In.WC			
9	€ 600 F: :Time	li i	-	control will be released to the operator.			
	© 1200 F: :Time	H T	adjust gas flow and n draft 'ā; <-0.5 In	ID fan speed to maintain temperature			
	S 10001.	1000 1 and system	n araji w <-0.5 m	,, C.			
FURN	ACE START-UP		. 11	Initial and record time for each item.			
144	Set Bleed Air Damper to 75	5% 60% due	etc cold a	(C			
44	Turn Furnace Key to "BLOW Set Controller to "MANUAL"	_	-	o maintain <-0.5 In.WC			
77.4	1						
1 7/4	Turn Furnace Key to "BURN						
##	Verify "INTERLOCK OK" Ligh	nt is energized.					
	Once the burner started, the col			re.			
. \	The pilot will then attempt to lig	-					
EH	Open Bleed Air Valve to 100% Left at 60%						
TH	Ramp-Up Furnace Temp to Record Furnace temperatu			tate, System Draft and Temp's. control room log sheet.			
				to the operator. The operator must adjust			
	ID fan speed to maintain <-0.5	In.WC, afterburner te	emp @ 1800 Deg F	and furnace temp @ SOAK temperature.			
E#	Manually Log Operating Po	arameters.					
7	Use the attached Log Sheet to r			ourly.			
	SOAK TIMES and TEMPERAT	URES will vary from	test to test.				
	** USE NEXT PAGE(S) TO LO	G OPERATING PAI	RAMETERS				
COOL	-DOWN			Initial and record time for each item.			
TT.	Turn Furnace Key to "BLOW	ER" After lowering	Furnace Temp t	o 200 Deg. F.			
E#	STOP "OXIDIZER" and "AIR E	BLOWER"					
HE	STOP Computer Datalogge	er when all thermo	couples indicate	e less than 150 Deg F.			
	** FOLLOW THE FURNACE U	NLOADING PROCE	DURES IN APPEN	DIX "R" OF HASP.			

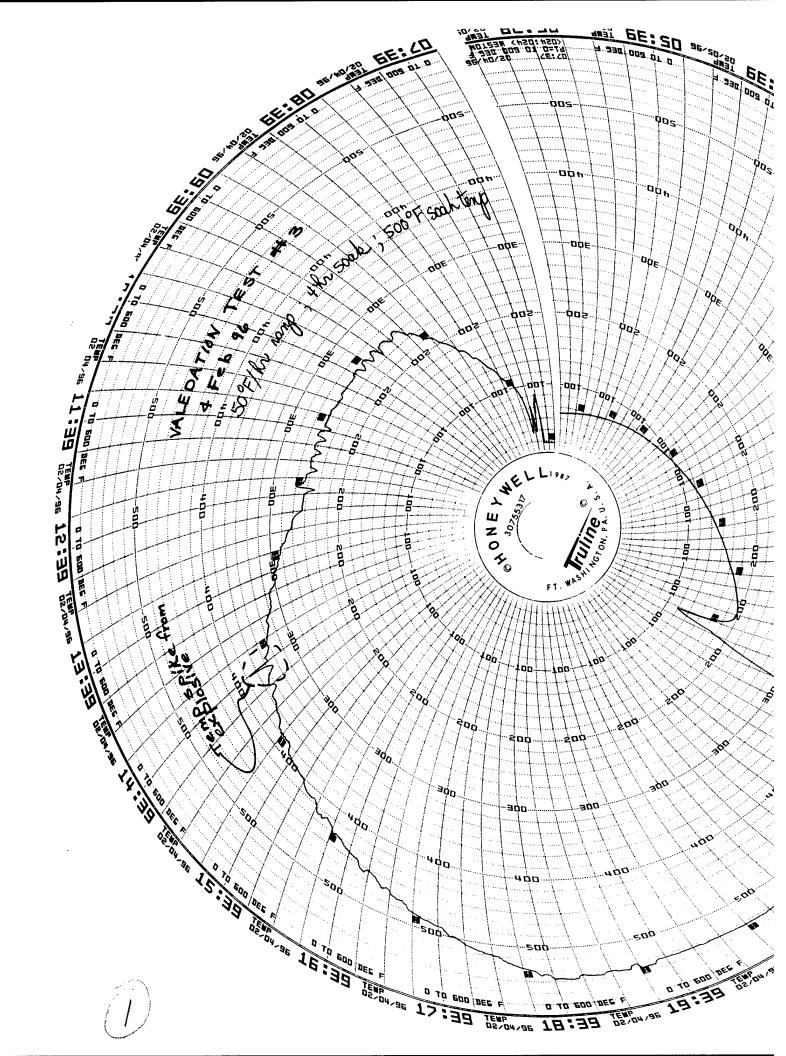
HOURL		ALC:		
Pate: _	04	FEB.	96	
7me -				

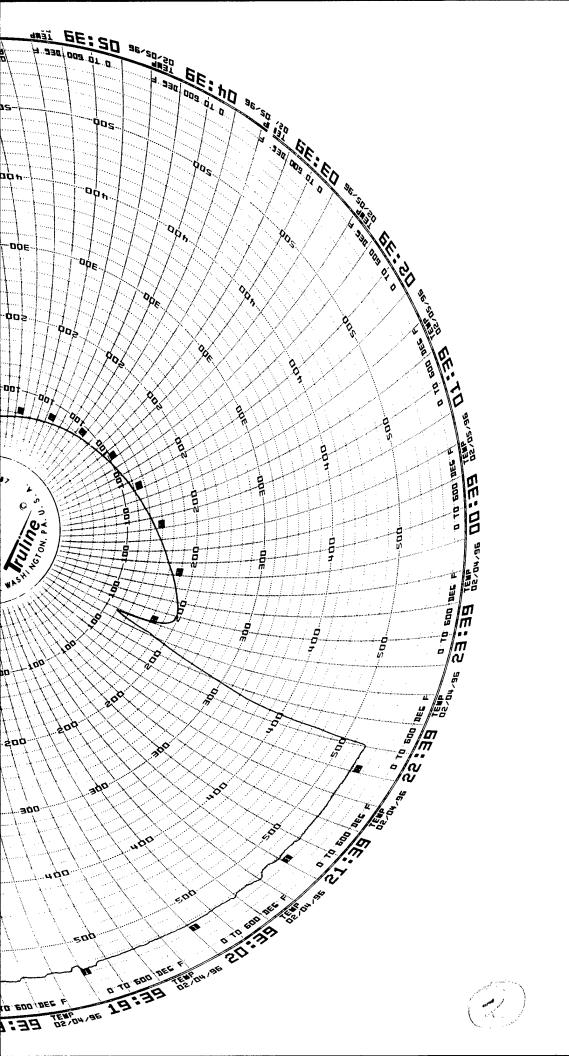
Test Bumber:	T3	
Ramp-Up Rote:	50°/HR	
Soak Time:	4 Hrs	
Soak Tamp:	500°	

		T.T.				<u> </u>	<u> </u>		I			[1	
Tag	Description	Unit	Time:	0900	10:00	11:00	1700	1320	14:00	1500	1600	1700	1800	1900	2000	2100	3200
FURNACE																	
PIT- 2 32	Fuel Gae Prossure	A.WC		14.93	2293	18.66	20.40	18.63	22.92	24.27	29.73	32.69	3691	37.34	33.0C	32.99	30,45
FIT-231	Fuel Gas Flow	CFH		31	23	30	29	29	30	31	32	33	34	34	33	33	33
PIT-222	Combustion Air Prosture	M.WC		26,93	27.20	26.95	26.86	26.60	26.0	26.74	2691	27.01	229	27.16	27.1:	27.18	27.25
FIT-221	Combustion Air Flow	CFH										16325			10373	10591	10478
P1T-158	Chamber Processro	M.W.C		61	- 47	-0.47	-0.46					14315	·3/	41	-0.55	54	7,63
TIT- 20 1	Recorder Temperature	Dag.F		136	255	250	254	253	299	345	397	444	495	546	539	537	535
117- 20 2	Furnece Exit Gas Temp (Control)	Dog.F		137	256"	251	256	_		344			<i>5</i> 00	<i>551</i> .	<i>5</i> 43	542	540
TIT- 20 3	Motorial Thermocouple #1	Dag.F		106	227	227				323			482	542	534	535	535
TIT-2 94	Motorial Thermocouple #2	Dag.F		103	202	221	230	132	264	306			445	498	504	508	50B
F1T- 20 5	Meterial Thermocouple #3	Deg.F		70	148	17/	185			254				424	449	462	47]
NT-200	Material Thermocouple #4	Dag.F										398		507.	505	506	511
FIT- 29 7	Material Thermocouple #5	Dags		127	250	240	148	243	296	343	396	446					540
AVG. 450 505 507 510 513 .																	
NT-131	Combuster Burner Temp. Control	Dag. F		1811	1814	1827	1825	1887	1811	1806	1815	1816	1797	1838	1784	1785	1822
FIT-148	Funnes Flow PPI+	-GN		597		\angle					\angle			-	_	-	_
4T-151	Fumes Pressure (Furnece Draft)	MIC		0.47	0.43	1.45	0.46	0,43	0.37	0.39	0.39	0.36	.34	.28	0,24	.25	,20
T-145	Combuster Temperature	Dag. F		1816	1807	1812	1811	1811	1817	1814	1821	1827	1818	1846	1793	1793	1830
4T-133	Fuel Processo	PSIG		0.72				0.50	s.29	0.22	0.15	0.10	45	-09	0.08	.08	.08
NT-121	Fuel Gas Flow CFH	CFM		947	805	872	820	778	709	664	615	521	55/	502	458	458	457
CEM																	
IOx-B	Interconnecting Duct NOx	ppm		0.3	0.2	2.5	2.2	2.2	2.5	2.7	<i>3.</i> 3	3.8	4.5	4.5	4,0	4.3	4.3
NC-B	Interconnecting Duct THC	ppm		69.9	75.9	21.6	685	73.8	84.4	7/_5	78.0	678	72.1	1000	100.0	1000	-142
:0	Stack's CO			0.0	0.0	0.5	0.5	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0,0	<u>,5</u>	,5
nc .	Stack's THC	ppn		0.4	0.5	0.9	1.1	75	6.0	5.7	5.3	5.8	-45	4.6	-4.5	-45	-4,5
10x	Stack's MOx	pprii		48.0	50.6	84.4	57.7	51.2	56.6	62.6	64.5	56.7	61.8	652	62.9	62.8	68,4
02	Stack 502	ppm		9.2													,5
2	Steci's 02	*		12.48	12.88	10.35	12.88	12.30	12.05	11.95	11.88	12.43	11.93	11.35	11.98	11.98	11.7
02	Stack's CO2	*		5.9%	5.54	4.27	5.46	6.14	<i>5.</i> 92	600	608	5-29	5.96	6.44	6.08	6.10	628
1 7-30 0	Ambient Temp	Deg. F		170	210	20	17	23,3	22.2	77.9	23.3	20.1	16.4	14.3	13.1	14.2	13.2
oother proise	Relative Humidity			5/2	13.7	50.8	14.3	46.9	50.7	51.7	47.8	60.0	73.i	72.6	87.0	30	76.9
-														-			

3														
5/14			-											
HES		·	-											
Š			-											
1600	1700	isa	1900	200	2100	3300	2250			 				
29.73	32 69	340	272	73.00	370	20.95	21.85	}						
32	I	1	1 .	1	l .	l .	}							
126.91	1	7					1							
10388	1	1	J	i	l	l								
-0-38	1432	3/	41	-0.55	54	7.63	-,63							
397														
401	449	500	551	543	542	540	533							
379	428	482	542	534	535	535	5 9 B							
353	397	445	498	504	508	50B	507							
190														
354		i .	l		1	l i	1							
396	446	501	554	543	543	540	539							
		450	505	507	5/0	513	512							
	_									 				
1815	1816	1797	/838	1784	1785	1822	18.16							
			_	_	-		-			 				
6.3						1				 		-		
1821											 			
0.15									_	 			 	
615	521	55/	502	458	458	459	455							
3.3	3.8	4.5	4.5	40	4.3	4.3	42							
78.0														
0.0														
5.3	1			1	1		- 1							
64.5			-											
2.0					1	- 1	- 1							
11.88		1				- 1								
608				1	i	ĺ	1							
233		7												i
47.8					1	i			1					:
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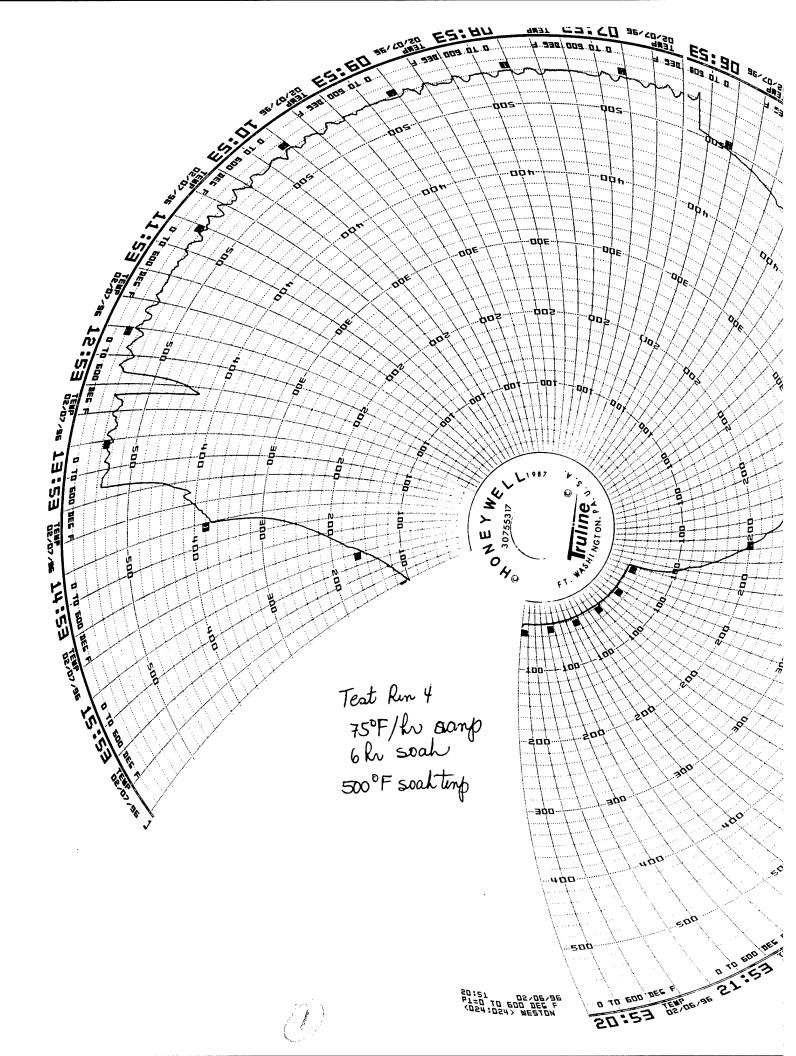
Dre -	START-UP (1 of 3)		Test Numbe		Γ4 5°/Hr
rie -	Date: 6 FEB 96	K	amp-Up Rate Soak Time		O Hrs
	Time: 1630		Soak Temp		500
MECH	IANICAL				Initial eac
KJ7C	Inspection doors/manways are SECURED	Verify all	valves, door	rs, inspection p	oorts, manway, etc
X21C	Gas Valves OPEN	have been	returned to	a position cap	able of sustaining
XX	View/Inspection Ports CLOSED	system ope	erations.		
221	Record Gas (Propane) Valve Position	75%			
ELEC.	TRICAL				Initial eac
XX	All Lockout/Tagouts (1-5) are ACCOUNTED.				
KK	Furnace and Afterburner Control Breakers are	ON.	•		
991	Verify Emergency Pushbuttons are NOT ENGAC	SED.			
14B	BUMP Motors and switch to "AUTO"				
V	Furnace Combustion Blower (M-220)	l'erify field	d selector si	vitches are in	".11 TO" after
	Afterburner Combustion Blower (M-130)	all motors	have been '	"BUMPED" to	verify operations.
	Afterburner I.D Fan (M-158)				
	Place Afterburner Switch in REMOTE				
#1	Calibrate CEM	Tank	Recorde	ed Adjustm	ent (Y/N)
7		Values	Values	ZELLOUSER	
	✓ Interconnecting Duct - NOx	204.1	204	2.05	Y
	Interconnecting Duct - THC	91.5	90	91.8	Y
	✓ Stack NOx	204,1	204	204.6	N
	Stack SO2	399,9	399	399.0	y
	Stack THC	91.5	915	91,1	Y
	Stack CO	437,4			V
	Stack O2				V
	Stack CO 2				V
	The state of the s	21.89 17.95	21.0 17.95	437.0 21.85 17.92	Y
712	** I'erify that all regulators for Calibration Gas Tanks	are CLUSED			
144	Datalogger/Computer is ON				
	Record Time (Computer Clock)				
	Record Ambient Temperature (TIT-300)				
	Record Ambient Humidity (call Weather Service &	64-3010 or 945-70)000)		
√ ₩	Pre - Spike Activities				
	Lock-out all Motors; Complete Exclusion Log				
	Secure Equipment Pad and Access Road w/ Chair	זר			
	Spike Test Materials and Furnace Test Plates				

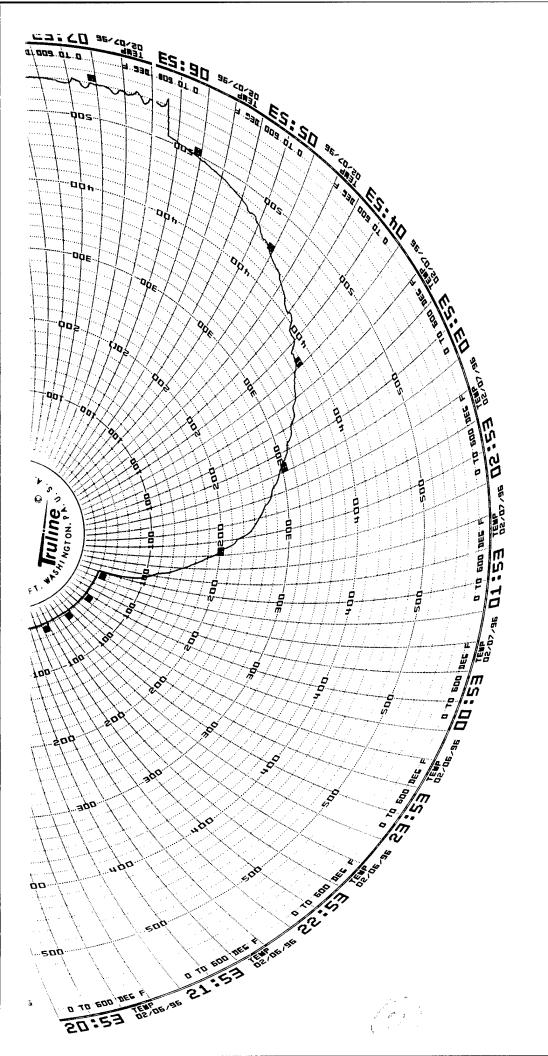
LOADING/UNLOADING (2 of 3) Date: & FEB % Time: 1630	Test Number Ramp-Up Rate: Soak Time: Soak Temp:	
FIELD ACTIVITIES		Initial each item.
$\cancel{\cancel{1}}$ Load Furnace with Materials and Thermocouples	For each rack bin, provide a	description in
. /	terms of contents, appearance	
#/ Rack A's Characteristics. (1453 LBS)	** Refer to loading procedures t	or Instructions.
	45 311 STEEL PAPE	F'1)A/A (Ib-1)
Initial Wt.(lbs) Final Wt.(lbs)	Materials 4 3 Intrid Wight	s) Find(W).(iDs)
CONCRETE DESKIS 365	000000 pecas #4/30 PARE 87 60	69 Les
** Secure pipe to prevent pipes from rolling	Take Pictures	
Rack B's Characteristics. (1547 205) Initial Wt.(Ibs) Final Wt.(Ibs) RACK & SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinc CP-Comtaminated Steel Piep, CC-Cont. Clay Pipe, CD-Co Total Weight of the two racks, must be less than 3,000 Lbs.		E 05 2 6 3
Mark Locations of Thermocouples		
ABBUE SPIKE Rack B	Rack A	Burner
Roll Calls and Close/Furnace Door	l'erify all site personnel are a	
Rose Miller Canilland	Have each person initial this of Close and secure furnace door	
Complete Spike Sample Weigh Sheet		
** SEE NEXT PAGE FOR AFTERBURNER and FURNACE STAI		

Date: Soak Remp: Soak Temp: Soak Temp: Soak Temp: Soak Temp: Soak Temp: Initial and record time for each iter Start "No. FAN". Adjust fan speed to maintain a system draft < -0.5 in. WC Start "No. FAN". Adjust fan speed to maintain < -0.5 in. WC Start "OXIDIZER" (Burner). Adjust fan speed to maintain < -0.5 in. WC Once the burner has started, the control system will initiate a purge sequence. The pilot will then attempt to light the burner at low fire. Start "DATALOGGER" Pushbuttons on the Computer. Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain < -0.5 in. WC Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain < -0.5 in. WC Start "DATALOGGER" Pushbuttons on the Computer. Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain < -0.5 in. WC The operator must adjust gas flow and ID fan speed to maintain temperature 1800°F and system draft @ < -0.5 in II C. The speed to maintain temperature 1800°F and system draft @ < -0.5 in II C. The Turner of MANUAL"	IAXI	-UP (3 of 3)	Rmp-Up Time:						
TERBURNER START-UP Start "I.D. FAN". Adjust fan speed to maintain a system draft < -0.5 In. WC Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain <-0.5 In. WC Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain <-0.5 In. WC Once the burner has started, the control system will uninate a purge sequence. The pilot will then attempt to light the burner at low fire. Start "DATALOGGER" Pushbuttons on the Computer. Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain <-0.5 In. WC **Once the burner is at low fire, burner control will be released to the operator. The operator must adjust gas flow and ID fan speed to maintain temperature **1800F** Adjust fan system draft *@ <-0.5 in IC. **IRNACE START-UP Initial and record time for each iter **IRNACE START-UP Initial and record time for each iter **IRNACE START-UP Initial and record time for each iter **IRNACE START-UP Initial and record time for each iter **IRNACE START-UP Initial and record time for each iter **IRNACE START-UP Initial and record time for each iter **IRNACE START-UP Initial and record time for each iter **IRNACE START-UP Initial and record time for each iter Initial and record time for each iter **IRNACE START-UP Initial and record time for each iter **IRNACE START-UP Initial and record time for each iter Initial and record time for each iter **IRNACE START-UP Initial and Tempt to 15% Turn Funnace Key to "BURNER" Position. Adjust ID fan speed to maintain (-0.5 In. WC **Set Controller to "MANUAL". Set controller output to 0.0 Turn Funnace Key to "BURNER" Position. **Verity "INTERIOCK OK" Ught is energized. **Open Bleed Air Valve to 100% **Ramp-Up Funnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. **Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. **Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. **Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. **Position Temperature Sys	Date:		Soak Time:						
Start "I.D. FAN". Adjust fan speed to maintain a system draft < -0.5 In. WC Start "Pre-Mix Air BLOWER". Adjust fan speed to maintain <-0.5 In. WC Start "OXIDIZER" (Burner). Adjust fan speed to maintain <-0.5 In. WC Once the burner has started, the control system will initiate a purge sequence. The pilot will then attempt to light the burner at low fire. Start "DATALOGGER" Pushbuttons on the Computer. Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain <-0.5 In.WC **COOF.** **Ime** **1200 F:** **Ime** **1200 F:** **Ime** **1800°F and system draft @ <-0.5 In IVC. RNACE START-UP **Initial and record time for each iter **Initia	Time:		Soak Temp:						
Start "I.D. FAN". Adjust fan speed to maintain a system draft < -0.5 In. WC Start "Pre-Mix Air BLOWER". Adjust fan speed to maintain <-0.5 In. WC Start "OXIDIZER" (Burner). Adjust fan speed to maintain <-0.5 In. WC Once the burner has started, the control system will initiate a purge sequence. The pilot will then attempt to light the burner at low fire. Start "DATALOGGER" Pushbuttons on the Computer. Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain <-0.5 In.WC **COOF.** **Ime** **1200 F:** **Ime** **1200 F:** **Ime** **1800°F and system draft @ <-0.5 In IVC. RNACE START-UP **Initial and record time for each iter **Initia		DUDNED CTART ID	Letted and a condition for a such than						
Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain <-0.5 In.WC Start "OXIDIZER" (Burner). Adjust fan speed to maintain <-0.5 In.WC Once the burner has started, the control system will initiate a purge sequence. The pilot will then attempt to light the burner at low fire. Start "DATALOGGER" Pushbuttons on the Computer. Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain <-0.5 In.WC & co.F. : : : : : : : : : : : : : : : : : :	2 - 2 1								
Start "OXIDIZER" (Burner). Adjust fan speed to maintain < -0.5 in.WC Once the burner has started, the control system will initiate a purge sequence.		•							
Once the burner has started, the control system will initiate a purge sequence. The pilot will then attempt to light the burner at low fire. Start "DATALOGGER" Pushbuttons on the Computer. Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain <-0.5 in.WC * 600 F.									
The pilot will then attempt to light the burner at low fire. Start "DATALOGGER" Pushbuttons on the Computer. Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain <-0.5 in.WC & 600 F:		Start "OXIDIZER" (Burner).	Adjust fan speed to maintain <-0.5 In.WC						
Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain <-0.5 In.WC \$ 600 F: ::Itime \$ 1200 F: ::Itime \$ 1200 F: ::Itime \$ 1800 F: :Itime \$	- 11		• • • •						
© Copen Bleed Air Valve to 100% Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace temperatures during ramp-up hourly, on the control room log sheet. Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust ID fan speed to maintain temperature is each of the form of the furnace temp of Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace temperatures during ramp-up hourly, on the control room log sheet. Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust ID fan speed to maintain <-0.3 In WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature. Manually Log Operating Parameters. Copen Bleed Air Valve to 100% Manually Log Operating Parameters. Copen Bleed Air Valve Operating Parameters at least hourly. SOAK TIMES and TEMPERATURES will vary from test to test. "USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS OF OXIDIZER" and "AIR BLOWER" STOP "OXIDIZER" and "AIR BLOWER" STOP "OXIDIZER" and "AIR BLOWER" STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.		Start "DATALOGGER" Pushl	buttons on the Computer.						
© Copen Bleed Air Valve to 100% Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp	Pa v	Warm-Up Burner up to 180	00 Deg. F. Adjust fan speed to maintain <-0.5 In.WC						
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STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.	1	Turn Furnace Key to "BLOV	VER" After lowering Furnace Temp to 200 Deg. F.						
-	∄ \;	STOP "OXIDIZER" and "AIR	BLOWER"						
-	$M_{ar{m{E}}}$	STOP Computer Datalogg	er when all thermocouples indicate less than 150 Deg F.						
	-								

i

HOUR In	**************************************			Test Hember:	#4 75 %/hs 6 ls 500° 1-	- - -
	1		22027 3400			
Tag	Description		220 230 à 400			
FURNAC	E					
P1T-232	Fuel Gas Pressure	h.WC	3.68 3.76 3.76			
FIT-231	Fuel Gas Flow	CFH	-0-0-0			
PIT-222	Combustion Air Procesure	h.WC	2454 25.01 2498			
FIT-221	Combustion Air Flow	CFH	11980 11977 11959			
P1T-158	Chamber Pressure	h.WC	-0.30 - 29 - 0.28			
T1T-201	Recerdor Temperature	Deg.F	32 31 30			
TIT- 20 2	Furnece Exit Gas Temp (Control)	Deg.F	32 31 -1.0			
T1T-203	Material Thermocouple #1	Deg.F	34 32 32			
TIT-294	Material Thermocouple #2	Dag.F	36 34 33			
TIT-205	Material Thermocouple #3	Deg.F	33 32 31			
TIT-206	Material Thermocouple #4	Deg.F	31 30 30			
TT-207	Material Thermocouple #5	Deg.F	34 32 32			
AFTERB	URMER		(Day a local			
TIT-131	Combuster Burner Temp. Control	Deg. F	1795 1801 1796			+
FIT-149	Furnos Flow	nes Hap	2364 2110 2107			
P1T-151	Furnes Pressure (Furnace Draft)	hW C	0.50 0.45 0.45			
TIT-145	Combustor Temperature	Dog. F	1799 1798 1881			
PIT-133	Fuel Pressure	PSIG	0.78 0.72 0.74			
TIT-121	Fuel Gas Flow	ph are	1029 97/ 981			
CEM						
MO B	Interconnecting Duct NOx	ρρπ	-09 -1.0 -1.0			
NOx-B	Interconnecting Duct THC	ppm	0.0 0.0 0.01.3			
THC-B	Ministrating post into	,,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
CO .	Stack's CO	ppm	0.0 0.5 -85			
THC	Stack's THC	ppm	-45-6.01.2			
M Ox	Stack's NOx	ppm	-3.0 2.5 405			
S 02	Stack S02	ррт	2.5 -2.5			
•	Stack's 02	%	2016 2010 1890			
C02	Stack's CO2	%	0,10 1.78 1830			
TIT-300	Ambient Temp	Deg. F	26.70			
Weather	m a strategy and an artists and		99.5			





1. ...

			Test Number:	5 7+
Pre -	START-UP (1 of 3)	Ro	amp-Up Rate:	75 × / H/
	Date: + 125 16		Soak Time:	+ H, >
	Time: 121 20		Soak Temp:	(ii. t!
MECF	HANICAL			Initial each ite
y.T.	Inspection doors/manways are SECURED	Verify all v	alves, doors,	inspection ports, manway, etc.
4.7.	Gas Valves OPEN	have been	returned to a p	position capable of sustaining
ì.Ti	View/Inspection Ports CLOSED	system ope	rations.	
	Record Gas (Propane) Valve Position	75%	<u>: </u>	
ELEC	TRICAL			Initial each it
27	All Lockout/Tagouts (1-5) are ACCOUNTED.			
1.10	Furnace and Afterburner Control Breakers a	re ON.		
1,11	Verify Emergency Pushbuttons are NOT ENG	AGED.	·	
1.1.	BUMP Motors and switch to "AUTO"			
	Furnace Combustion Blower (M-220)	l'erify field	selector swite	ches are in ".11.TO" after
	Afterburner Combustion Blower (M-130)	all motors	have been "Bl	LMPED" to verify operations.
	Afterburner I.D Fan (M-158)			
	Place Afterburner Switch in REMOTE			
\mathcal{H}_{i}	Calibrate CEM	Tank Values	Recorded Values	Adjustment (Y/N)
	Interconnecting Duct - NOx	204.1	204	N
	Interconnecting Duct - THC	91.5	91	Y
	Stack NOx	204.1	204	N
	Stack SO2	399.9	399	Ý
	Stack THC	91.5	90	Y
	✓ Stack CO	437.4	442	Ň
	Stack O2	21.89	21.8	<i>Y</i>
	Stack CO	17.95	17.95	<u> </u>
·····y1	** Verify that all regulators for Calibration Gas Tar	nks are CLOSED		
	Datalogger/Computer is ON			
	Record Time (Computer Clock)			
	Record Ambient Temperature (TIT-300) Record Ambient Humidity (call Weather Servici	e 664-3010 or 94 <i>5-70</i> 9	90)	
	Pre - Spike Activities			
	Lock-out all Motors: Complete Exclusion Log Secure Equipment Pad and Access Road w/ Ct	agins		
		iains		
	Spike Test Materials and Furnace Test Plates			

LOADING/UNLOADING (2 of 3)		Test Number Ramp-Up Rate:		
Date: <u>2−7−94</u> Time: <u>1945</u>		Soak Time: Soak Temp:		
FIELD ACTIVITIES			1.	nitial each item.
Load Furnace with Materials and Thermo	ocouples	H	, provide a descripti	
# Rack A's Characteristics. (1434))408)408	11	appearance, moistu procedures for instruc	
Initial Wt.(lbs) Final Wt.(lbs)	COCO Mate	cocc	Initial Wt.(lbs) Debre Stee	Final Wt.(lbs)
Concrete. Debre 976# ** Secure pipe to prevent pipes from rol		ake Pictures	steel sine Sposi	1453#
# '2 Rack B's Characteristics.	1.7 .	· T \		
Initial Wt. (lbs) Final Wt. (lbs) Rack 430 ^{II} 5'5teal pipe 1494 ^{II} SP-Spiked Steel Pipe. SC-Spiked Clay Pipe	ne, SD-Spiked Cinder Bloc	rials O O O O O O O O O O O O O O O O O O O	r Tet Initial Wt. (Ibs) Clay pipe Cinderbleets	Final Wt.(lbs) 1252# 90
CP-Comtaminated Steel Piep, CC-Cont. Total Weight of the two racks must be les		ris		
\cancel{BT} Mark Locations of Thermocouples				
				Burner
	ck B		ick A	
Roll Calls and Close Furnace Door	_	Verify all site perso	onnel are accounted	•
Complete Spike Sample Weigh Sheet				

** SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

STAR	RT-UP (3 of 3)	Rmp-Up Time:						
Date	2-7-96	Soak Time:						
Time		Soak Temp:						
AFTE	RBURNER START-UP	Initial and record time for each item.						
TO	Start "I.D. FAN". Adjust fan	speed to maintain a system draft < -0.5 In. WC						
176	Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain <-0.5 In.WC							
TE.		Adjust fan speed to maintain <-0.5 In.WC						
12								
	Once the burner has started, the The pilot will then attempt to li	ne control system will initiate a purge sequence. Ight the hurner at low fire.						
13	Start "DATALOGGER" Pushi	outtons on the Computer.						
YB	Warm-Up Burner up to 180	0 Deg. F. Adjust fan speed to maintain <-0.5 In.WC						
	@ 600 F: :Time	Once the burner is at low fire, burner control will be released to the operator.						
	€ 1200 F: :Time	The operator must adjust gas flow and ID fan speed to maintain temperature						
	g 1800F: :Time	1800°F and system draft 'â _j <-0.5 In WC.						
FURN	ACE START-UP	Initial and record time for each item.						
7B	Set Bleed Air Damper to 7:	5%						
16	Turn Furnace Key to "BLOWER" Position. Adjust ID fan speed to maintain <-0.5 In.WC							
10	Set Controller to "MANUAL". Set controller output to 0.0							
	Turn Furnace Key to "BURNER" Position.							
	Verify "INTERLOCK OK" Light is energized.							
	Tomy MYERIOOK OK LIGH	n is charged.						
	14	ntrol system will initiate a purge sequence.						
	The pilot will then attempt to li	ght the burner at low fire.						
1B	Open Bleed Air Valve to 1	00%						
40	Ramp-Up Furnace Temp to	Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.						
	Record Furnace temperat	ures during ramp-up hourly, on the control room log sheet.						
	Once the burner is operating a	t low fire, burner control will be released to the operator. The operator must adjust						
	ID fan speed to maintain <-0.5	In.WC, afterburner temp @ 1800 Deg F, and furnace temp @ SOAK temperature.						
B	Manually Log Operating P	arameters.						
	Use the attached Log Sheet to	record all operating parameters at least hourly.						
		URES will vary from test to test.						
	• •	OG OPERATING PARAMETERS						
COOL	-DOWN	Initial and record time for each item.						
132	Turn Furnace Key to "BLOV	/ER" After lowering Furnace Temp to 200 Deg. F.						
22X	STOP "OXIDIZER" and "AIR	BLOWER"						
2011	<i>t</i>	er when all thermocouples indicate less than 150 Deg F.						
XH	** FOLLOW THE FURNACE U	NLOADING PROCEDURES IN APPENDIX "R" OF HASP.						
_								

PIK# 1 DKY 1434 - 10115h Rach
W/P PIPE 1315? - 10115h Rach
800KS
572
572

Zuck #1 / puck weigh 600 #?

Ruch + 875 165 976 ?

Ruck + Coucete Petris 1351;

+ Sheel Hebris 1351;

Pipe & Pieces 1453

Back # 2 14.96

et to hise 1252

HOURLY		ALO.	3 (of]
Sete:	7	FEB	96	
Time:	•			

Tool Munice: A H
Ramp By Rate: 75° F/L
Back Time: 6 MS
Sock Time: 500° F

		7.]			Ι												di i
Tag	Description	Unit	1 <u>0100</u>	020	030	10400	1500	2600	3700	0 800	900	icoo	1100	1200	1500	1400	1500	1900
FURNACE	,		Time:															
P1T- 2 32	Fuel Gas Prossure	h.WC	3.7/	3.68	135	18.46	10.91	11.30	11.32	11.4	11-18	1081	16.10	10.70	10.44	8.08	3.58	· T
FIT-231	Fuel Gas Flow	CFH	-0	-0	65	74	87	108	109	117	108	102		104	98	39	0	
PIT-222	Combaction Air Pressure	h.WC		24.78		1595			15.80		256					_	11 2551	
FIT-221	Combustion Air Flow	CFH	11948	-		1022												-
PIT-158	Chamber Pressure	h.WC	-0.28	29	- 29	 	13				-20	~,23	.26		- 30		-0.14	
TIT-201	Recorder Temperature	Deg.F	31	32	2/7	 		445	4%		550	546		546			317	
TIT-202	Furnece Exit Ges Tomp (Control)	Dag.F	3/	32	-	299	379	449	501	554					531		3,2	
TIT-203	Metarial Thermocouple #1	Dag.F	33	34	2//	297	376	443	498			546	541		547		340	
TIT-294	Material Thermocouple #2	Dag.F	33	33	98	159	218		327	376	410		455		483		450	
TIT-205	Material Thermocouple #3	Deg.F	32	33	166	259	327	392	=	496		504			515		552	
TIT-296	Meterial Thermocouple #4	Dag.F	—	32	127	247	320	389	435			489		530	1		261	
*11-207	Material Thermocouple #5	Deg.F	32	33	240	323	403	485		586				598			530	
	AVG.	•			L	L			·	<u> </u>		510	<u> </u>	529				
AFTERBU	RNER										ı				Г			
TIT-131	Combuster Burner Temp. Control	Dag. F	1774		1807	1804	1810	18//	1801	1799	1821	1821	/784	1784	1789	1809	1827	
FIT-149	Furnos Flow PAH	CF M	2120	2337	2253	2202	2138	2355	2213		2253	2229	a192	2169	2/20	2258	2151	
PIT-151	Furnos Prossuro (Furnoco Draft)	MIC	0.45			0.39					-35	30	,32	-30	.25	0.5ef	6.32	
TIT-145	Combuster Temperature	Dog. F		1813			1813				1810	1809	1787	1835	1816	,	,	
P1T-133	Fuel Pressure	PSIG .	0.72	0.77		D.48	0.25				-14	11	.23	.05	.06	0.11	0.14	-
TIT-121	Fuel Gas Flow CFH	ord .	972	1047	859	77/	661	629	602	601	582	550	664	357	618	604	609	
CEM																		
ma b	harman nation Dune MO.		-//	1.3	-09	-0.6	0.1	16	//	1.9	1.8	2.0	1.6	1.7	1.7	12	0.0	
80x-8	Interconnecting Duct NOx	ррт	0.0			54.4			1.1 1171		428			38.1		-	4.8	
TNC-B	Interconnecting Duct THC	ppm																
CO	Stack's CO	pp m	-	2 <u>7</u> ,2		-0.5			-0.5			5	0.0	0.0	-,-	8.8	0.0	
THC	Stack's THC	ppm	-4.6	-4.5				1.0	0.0			0.0	0.0		0,0		0.0	
MOx	Stack's NCx	ppm	47.8	-4.0	. , . ,					• • •		69.2				93 3		
S 02	Stack S02	ppm .		-2.5	V		>/20				0.0				-0.5	-	1.0	
?	Stack's 02	%				14,13											12.05	
CO2	Stack's CO2	%	5.64	0.26	6,04	6.00	6.10				5.70		5.12	556	4,96	5.60	1.98	
111-300	Ambient Temp	Deg. F	26.5				31,3		34,8	34	40.8	50.6	55	57	62.2	53	52	
Weather Service	Relative Humidity		99.9				90.7		85.8		16.4	- 1	37	زږډε	30,2		424	
																	• 1-	

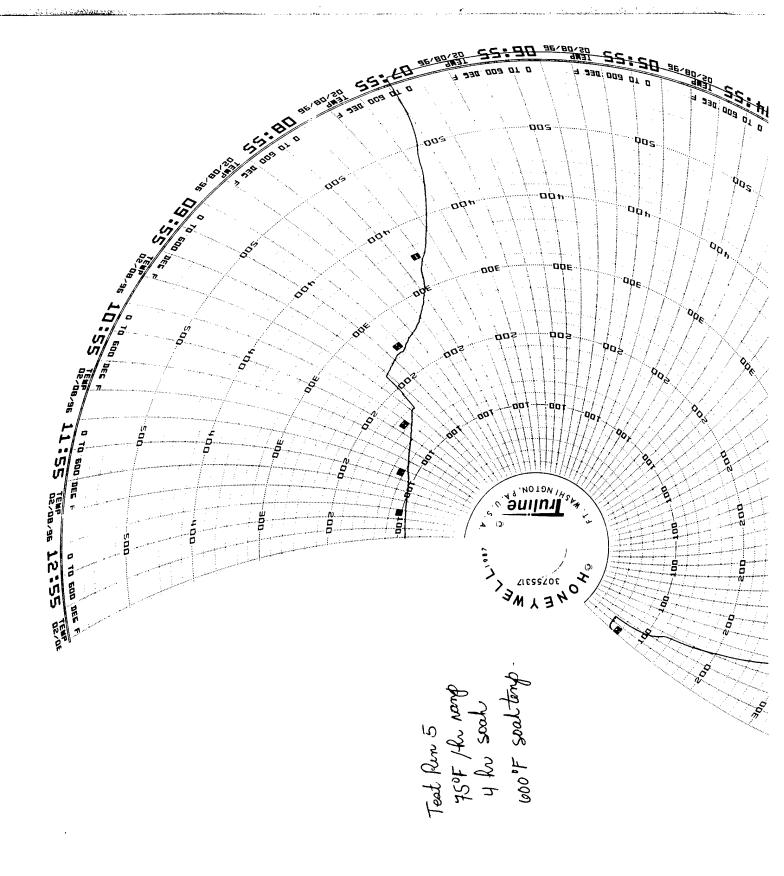
				Test Humber:	4.5	_
HOURI	7 FEB 96	ğ		Ramp-Up Rote:	#5 75°F/Lv 4hs 600°F	
Sate:	7 FEB 96			Soak Time:	4 hrs	
Time:		_		Sock Temp:	600°F	_
·			1			
Tag	Description	Unit	2400			
L			Time:			
FURNACE	•					
			11.37			
P1T-232	Fuel Gas Pressure	h.WC				
FIT-231	Fuel Gas Flow	CFH	94			
P1T-222	Combustion Air Pressure	h.WC	25,27			
FIT-221	Combustion Air Flow	CFH	10430			
P1T-158	Chamber Pressure	IL WC	-0.30			
TIT-201	Recorder Temperature	Dog.F	307			
		-	368			
TIT-202	Furnace Exit Gas Temp (Control)	Dog.F	3/4			
TIT-203	Material Thermocouple #1	Deg.F				
TIT-204	Material Thermocouple #2	Dag.F	238			
T1T-205	Material Thermocouple #3	Deg.F	236			
TIT-206	Meterial Thermocouple #4	Dog.F	245			
*1T- 2 07	Meterial Thermocouple #5	Deg.F	333			
	,					
AFTERBU	ANER					
TIT-131	Combustor Burner Temp. Control	Dog. F	1806,			
FIT-149	Furnes Flow 97		2338			
	Littleston					
PIT-151	Furnez Pressure (Furnece Draft)	hWC	1862			
TIT-145	Combuster Temperature	Dog. F				
P1T-133	Fuel Pressure	PS IG	0.63			
TIT-121	Fuel Gas Flow	L ann	902			
0544	-					
CEM				<u> </u>		
NOx-B	Interconnecting Duct NOx	ppm	-0.2			
THC-B	Interconnecting Duct THC	ppm	100			
			1.5-			
CO	Stack's CO	ppm	-0.5			
THC	Stack's THC	ppm	0.0			
MOx	Stack's NOx	ppm	48.7			
\$ 02	Stack SO2	ppm	4.0			
į	Stack's 02	%	11.63			
	Stack's CO2	%	5.76			
CO2	Afers a Ang	A.				
TIT-300	Ambient Temp	Deg. F	39			
Weether Service	Relative Humidity		97.8			

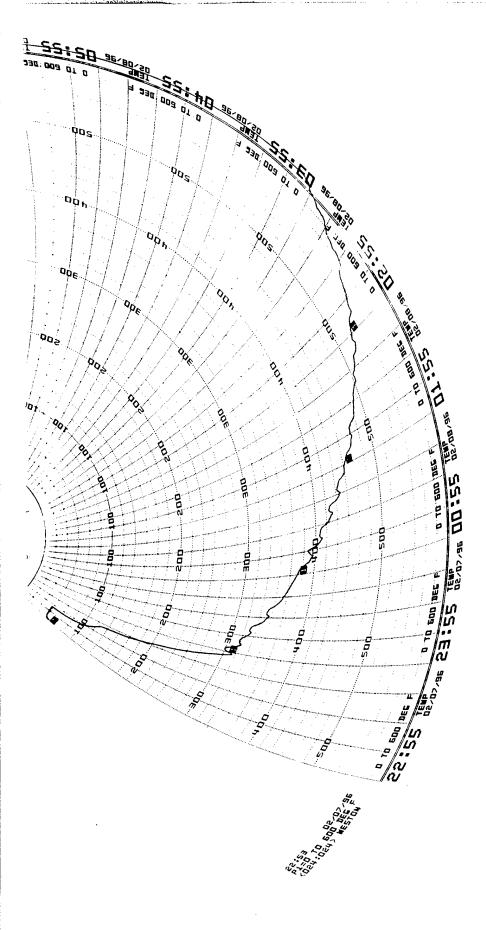
		۰	Tool Number: # 5	
IOUR	LY DATALOG of)	Ramp-Up Rate: 75° F/h	
Data Time	* 8 FEB 96	-	Sout Time: 4 Kro	
		-		
Гад	Description	Unit	0100 0200 0300 0400 0500 0600 720 0800 0900 1000	
		J L	Time:	
URNAC	CE C			
IT- 23 2	Fuel Gas Pressure	h.WC	1130 11.58 / 188 12.14 11.95 11.69 11.51 11.36 10.3 8.17	
T-231	Fuel Gas Flow	CFH	90 105 121 135 121 115 110 105 82 37	
T-222	Combustion Air Pressure	h.WC	252 2631 2531 2543 2543 2533 2534 25, 24 88 24.2 2367	
T-221	Combustion Air Flow	CFH	10371 10303 1022311175 1021310225 10261 10369 10403 10853	
T-158	Chamber Pressure	h.WC	-0.25 - 25 - 25 - 23 - 21 - 44 - 44 - 46 - 40 - 41	
T-201	Recorder Temperature	Deg.F	378 455 527 601 626 625 618 614 456 234	
T- 2 02	Furnece Exit Gas Temp (Control)	Deg.F	381 459 531 605 629 627 621 617 442 235	_
1-203	Meterial Thermocouple #1	Deg.F	401 479 55 3 (30 656 648 643 640 276 220	_
T-204	Material Thermocouple #2	Dag.F	312 379 44 2 569 547 559 561 562 280 239	_
	Material Thermocouple #3	Deg.F	334 410 480558 587 580 586 545 283 243	
T-205	,	·	355 430 503 578 617 622 614 613 303 253	
T-206	Meterial Thermocouple #4	Deg.F	414 496 575 656 667 654 655 653 261 254	
17-207	Meterial Thermocouple #5	Deg.F	1111170 372 051 050 061 053 633 847 254	_
FTERBU	URNER			
T-131	Combustor Burner Temp. Control	Dog. F	1818 1805 1889 1793 1827 1832 1838 1826 1820 1804	
T-149	Furnes Flow 3PH	_EFM	22102246 23522318 2199 2093 2116 2081 3106 2903	
T-151	Furnes Pressure (Furnace Draft)	hW C	0.42 0.42 0.47 0.42 0.37 0.30 0.28 .27 .87 .99	
Г-14 5	Combustor Temperature	Deg. F	1818 1812 1816 1830 1806 1805 1821 1831 1822 1806	
T-133	Fuel Pressure	PS IG	0.16 0.13 0.13 0.08 0.10 0.17 0.13 .08 . 42 .76	
T-121	Fuel Gas Flow	orsi	607 595 582 481 492 513 579 462 731 1043	
	CPA			

80x-8	Interconnecting Duct NOx	ррт
THC-B	Interconnecting Duct THC	ррт
CO CO	Steck's CO	ррт
THC .	Stack's THC	ppm
80 x	Stack's NOx	ррт
\$02	Stack \$02	ррт
٠.5	Stack's 02	%
C02	Stack's CO2	- %
TIT-300	Ambient Temp	Deg. F

Relative Humidity

0.7	1.1	1.4	2.05	25	2.1	2.1	20	1.0	-6			
-30.7	-31.0	-31.0	-31.3	-31.6	-31.7	-30.4	-303	-3 Q	-3ay			
0.0	0.0	-0.5	0.0	B.0	0.0	0.0	5	0-0	0-0			
0.0	0.0	0.0	0.0	0,0	6.0	0.0	0.0	0.0	0.0			
132	56.0	54.8	585	37.C	4:6	77 0	71.5	62.1	44,4			
5.5	<u>5</u> 0	4.5	4.5	4,0	3.5	4.0	3.0	2.9	2.5			
11.07	11.40	11.30	10,25	13.15	12.40	18.72	11.05	11.00	12 43			
6.24	6.07	6.00	6.66	1,52	528	6.42	7.00	5.80	5.36			
	36			36		43.J		<u>5</u> 5.				
	79.7			95.i		7 3.4		<i>19</i> , 3				





y was

Pre -	START-UP (1 of 3) Date: 月12 FEB	R		75°/H	
	Time: 00.30		Soak Temp:	2 Hrs 600'	
MECH	HANICAL				Initial each item.
[ZZ]])	Inspection doors/manways are SECURED	l'enti all s	valves doors i	nspection ports.	manway etc
(7)75 W					
	Gas Valves OPEN	have been	returned to a p	position capable	of sustaining
721	View/Inspection Ports CLOSED	system ope	erations		
778	Record Gas (Propane) Valve Position	 			
ELEC	TRICAL				Initial each item.
ZZ	All Lockout/Tagouts (1-5) are ACCOUNTED.				
	Furnace and Afterburner Control Breakers are ON				
THE P	Verify Emergency Pushbuttons are NOT ENGAGED				
GE.	BUMP Motors and switch to "AUTO"				
	Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE	11		ches are in "AU7 EMPED" to verij	=
[#	Calibrate CEM	Tank Values	Recorded Values	Adjustment ((Y/N)
	✓ Interconnecting Duct - NOx	75.6	70		
	Interconnecting Duct - THC	50.2	50	Ý	
	Stack NOx	75.6	70	N	
	Stack SO2	126.4	127	~ ~ ~	
	Stack THC	<i>5</i> 02	50	У	
	Stack CO	243.2	239	ΥΥ	
	Stack O2	11.94	11,4	<u>y</u>	
	Stack CO2	9.92	9.9	<u> </u>	
TH)	** Verify that all regulators for Calibration Gas Tanks are Datalogger/Computer is ON	CLOSED			
	Record Ambient Temperature (TIT 200)				
	Record Ambient Temperature (TIT-300) Record Ambient Humidity (call Weather Service 664-3	1010 or 945-70	100)		
	Pre - Spike Activities				
	Lock-out all Motors: Complete Exclusion Log				
	Secure Equipment Pad and Access Road w/ Chains				
	Spike Test Materials and Furnace Test Plates				

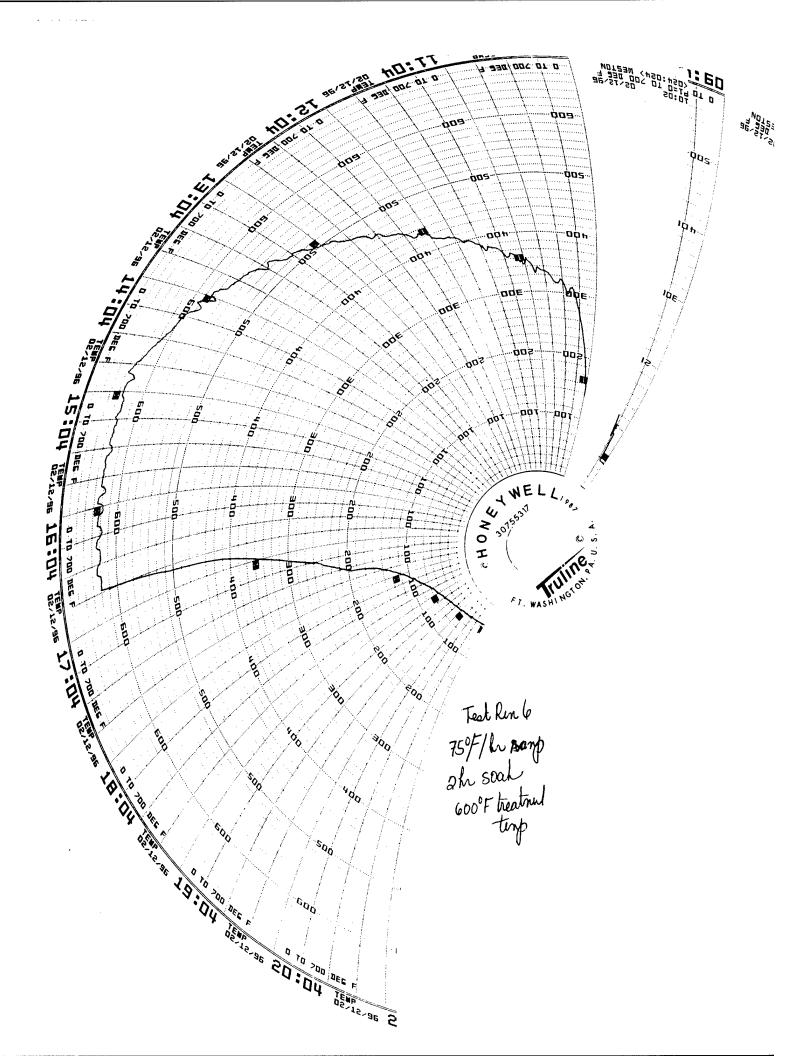
		Test Number		
LOADING/UNLOADING (2 of 3)		Ramp-Up Rafe:		
Date	e:	Soak Time:		·
Time		Soak Temp:		
TELD AC	TIVITIES		ir	nitial each ite
Load	Furnace with Materials and Thermocouple	li i		
1.1	/	terms of contents, app		
77/	Rack A's Characteristics. 600 185	Refer to loading prod 75	edures for Instruc	tions.
1501	Initial Wt.(Ibs) Final Wt.(Ibs)		rial Wt.(lbs)	Final Wt.(lbs)
	STEEL OPERLS (***** 366. 485	\$ 55 55 5 5 8	PES PAE 78285	<u> </u>
	367485	- FRANK	78 200	
	1	and the second		0.
	ROCK DEBRIS 348105	52527EX300 C	INDER BLOK	3620
	30740	Take Pictures	07223	
# 7	Rack B's Characteristics.	' 5	·	
TAL 1496	Rack B3 Characteristics.	44 TN1		
1.770	Initial Wt.(lbs) Final Wt.(lbs)	اسرا علا	ial Wt.(lbs)	Final Wt (!bs!
	RALIK 430 430 LBS		CLAVPAR	205 40
	<u> </u>		CLAYPAE 205 nos	_ 400 100
		O O ROX		
	5" STEEL PR- 340 LBS	001001	10-DOB BUILT	516 10
	5" STEEL POE 240 LBS	THE PART OF THE PA	1 NOAR BLUCK	
		Take Pictures		
	** SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Sp	piked Cinder Blocks		
	CP-Comtaminated Steel Piep, CC-Cont. Clay Pig	pe, CD-Cont. Debris		
	Total Weight of the two racks must be less than 3	,000 Lbs.		
Mark	Locations of Thermocouples			
	- Localions of Memocoopies			7
	#7			
				Burner
	TEI \			
	TET Rack B	Rack	A	
	Door Rack B	Rack	Α	
	Door Rack B	Rack		
7	Poor Rack B	esconsissed for seconds	997 <u>247 797 9847</u>	
Roll C	Door Rack B	l'erify all site personn	el are accounted	
Roll C	Poor Rack B	l'erify all site personn Have each person init	el are accounted	
Roll C	Poor Rack B	l'erify all site personn	el are accounted	
	Calls and Close Fornace Door wing Wington	l'erify all site personn Have each person init	el are accounted	
	Poor Rack B	l'erify all site personn Have each person init	el are accounted	

Date	Test #6 RT-UP (3 of 3) Rmp-Up Time: Soak Time: Soak Temp:
AFTE CONTROL OF THE C	Start "I.D. FAN". Adjust fan speed to maintain a system draft < -0.5 In. WC Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain <-0.5 In. WC Start "OXIDIZER" (Burner). Adjust fan speed to maintain <-0.5 In. WC Once the burner has started, the control system will initiate a purge sequence. The pilot will then attempt to light the burner at low fire. Start "DATALOGGER" Pushbuttons on the Computer.
T D	Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain <-0.5 In.WC
	© 600 F: Time Once the burner is at low fire, burner control will be released to the operator. The operator must adjust gas flow and ID fan speed to maintain temperature 1800F and system draft \hat{a}_i <-0.5 In WC.
FURN	NACE START-UP Initial and record time for each item.
	Set Bleed Air Damper to 75% Turn Furnace Key to "BLOWER" Position. Adjust 1D fan speed to maintain <-0.5 In.WC Set Controller to "MANUAL". Set controller output to 0.0 Turn Furnace Key to "BURNER" Position. Verify "INTERLOCK OK" Light is energized.
	Once the burner started, the control system will initiate a purge sequence. The pilot will then attempt to light the burner at low fire.
F.D.	Open Bleed Air Valve to 100% Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace temperatures during ramp-up hourly, on the control room log sheet.
	Once the burner is operating at low fire, burner control will be released to the operator. The operator must adjust ID fan speed to maintain <-0.5 In.WC, afterburner temp @, 1800 Deg F, and furnace temp @, SOAK temperature.
TE	Manually Log Operating Parameters.
	Use the attached Log Sheet to record all operating parameters at least hourly. SOAK TIMES and TEMPERATURES will vary from test to test.
	** USE NEXT PAGE(S) TO LOG OPERATING PARAMETERS
COOL	-DOWN Initial and record time for each item.
	Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F.
	STOP "OXIDIZER" and "AIR BLOWER"
138 B	STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.
	** FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.

- 1 FFB 46	HOURLY	OAT)	lLOG (of_	
	Bata:	12	FEB	96	_

Test Manher: A. G.
Ramp Up Rate: 75°F hr
Seak Time: 2-hr. ,
Seak Tamp: 6.00°F

Tag	Description	Unit	0900 1000 11:00 12:00 1300 1400 1500 1600 17.00
] [Time:
FURNACE			
P1T-232	Fuel Gas Pressure	h.WC	3.73 7.341085 11.11 11.29 11.37 11.32 11.34 7.70
FIT-231	Fuel Gas Flow	CFH	-1 1 86 98 114 121 119 119 -1
P1T-222	Combustion Air Procesure	In. WC	23.51.24.17.24.74.24.67.24.47.24.67.24.7.4.23.27
FIT-221	Combustion Air Flow	CFH	12200 1/220 15352 1824 10/05 10/33 10/73 10/84 12088
P1T-158	Chamber Pressure	m.WC	-0.36-0.35-0.33-0.24-0.25-0.45-0.51-0.49-0.19
TIT-201	Recorder Temperature	Deg.F	42 92 338 4/2 425 559 631 632 422
T1T-202	Furnece Exit Gas Temp (Control)	Deg.F	42 96 341 4/6 489 563 635 636 415
T1T-203	Meterial Thermocouple #1	Dag.F	43 76 286 362 433 508 667 625 488
T1T-204	Material Thermocouple #2	Dag.F	42 76 312 379 454 533 619 613 414
TIT-205	Material Thermocouple #3	Deg.F	48 44 270 359 438 516 591 604 550
TIT-206	Material Thermocouple #4	Deg.F	43 94 274 337 398 468 537 544 370
41.207	Material Thermocouple #5	Deg.F	42 106 364 445 524 593 655 662 467
AFTERBUI	RMER		
TIT-181	Combustor Burner Temp. Control	Dog. F	1867 1867 1804 1813 1804 1819 1827 1830 1810
FIT-149	Fumes Flow PMF	,em	2375 2297 2323 2349 2421 2284 2232 2 185 2503
P1T-151	Famos Pressure (Farnece Draft)	MWC	0.510.490.440.520.490.360.320.31062
TIT-145	Combustor Temperature	Deg. F	1813/1815/1810 1822/1807/1816 1853 1837 1821
PIT-133	Fuel Pressure	PSI G	0.840710.466310.170.090.110.040.16
TIT-121	Fuel Gas Flow CFH	ent	1101 987 765 738 662 525 341 653 600
CEM			
#0x-B	Interconnecting Duct NOx	ppm	-04-0,1 2091.12.0 3.0 3.4 2.8 -0.1
TNC-B	Interconnecting Duct THC	pp m	36.8 57.7 42.1 383 487 306 27.4 32.1 4.5
co	Stacife CO	дат	0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
THC.	Stack's THC	ppm .	-0.5-0.6-0.6-0.6-0.6-0.6
NOx	Stack's NOx	po m	62.7 57.283.0 68370.3 69.2 77.1 99.3 98.6
S 02	Stack \$02	ррт	-0.5-0.5000.000.5-0.00.00.0
•	Stack's 02	%	11.63 1268 128-12.3 12.45 11.82 12.72 10.67 1527
C02	Stack's CO2	%	5.340.720,840.760.80 0.820.94 0.88 0.5
TIT-300	Ambient Temp	Deg. F	39° 452 48
Weather Service	Relative Humidity		52% 43.7 37.8

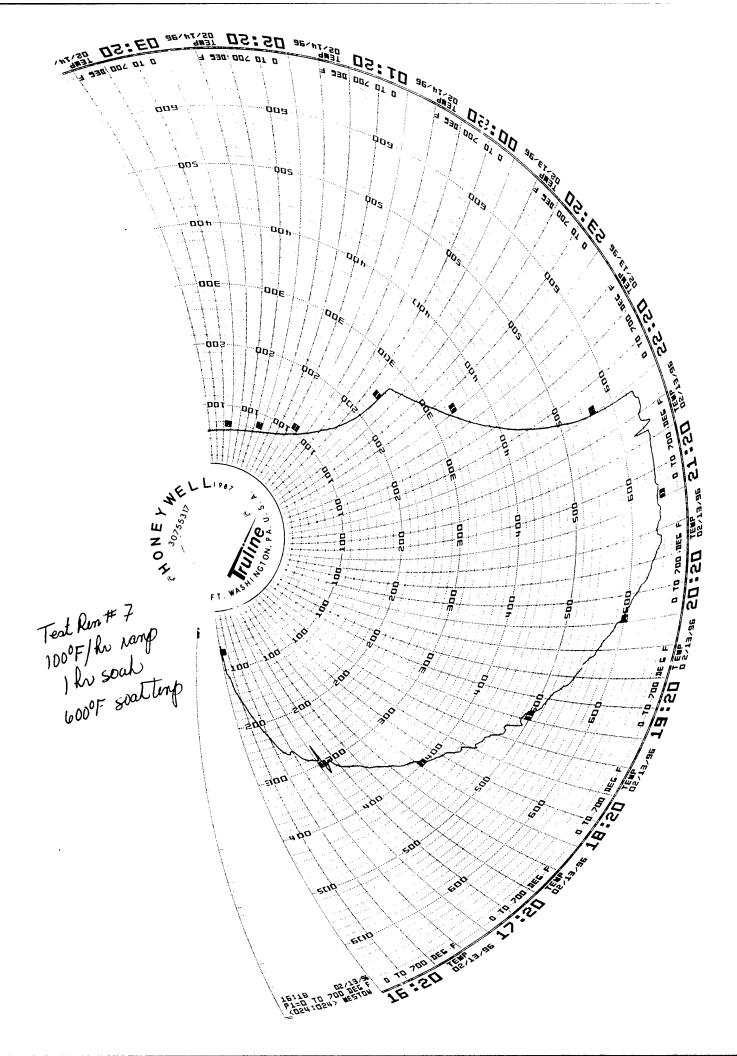


Inspection doors/manways are SECURED Gas Valves OPEN have been returned to a position capable of sustaining System operations. Record Gas (Propane) Valve Position	START-UP (1 of 3) Date: 13 FEB 96 Time:	R	Test Number: amp-Up Rate: Soak Time: Soak Temp:	ICOF/LU ILO 600°F
All Lockout/Tagouts (1-5) are ACCOUNTED. Furnace and Afferburner Control Breakers are ON. Verify Emergency Pushbuttons are NOT ENGAGED. BUMP Motors and switch to "AUTO" Furnace Combustion Blower (M-130) Atterburner LD Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOX Interconnecting Duct -	HANICAL			Initial eacl
All Lockout/Tagouts (1-5) are ACCOUNTED. Furnace and Afferburner Control Breakers are ON. Verify Emergency Pushbuttons are NOT ENGAGED. BUMP Motors and switch to "AUTO" Furnace Combustion Blower (M-130) Atterburner LD Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOX Interconnecting Duct -	Inspection doors/manways are SECURED	Verify all	alves, doors, i	nspection ports, manway, etc.
View/Inspection Ports CLOSED System operations.	1	have heen	returned to a i	position canable of sustaining
Record Gas (Propane) Valve Position TRICAL All Lockout/Tagouts (1-5) are ACCOUNTED. Furnace and Afterburner Control Breakers are ON. Verify Emergency Pushbuttons are NOT ENGAGED. BUMP Motors and switch to "AUTO" Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner LD Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Tank Recorded Adjustment (Y/N) Values Interconnecting Duct - NOX Interconnecting Duct - THC Stack NOX Stack SC2 Stack THC Stack CO Stack	,		•	, and the company of the community
All Lockout/Tagouts (1-5) are ACCOUNTED. Furnace and Afferburner Control Breakers are ON. Verify Emergency Pushbuttons are NOT ENGAGED. BUMP Motors and switch to "AUTO" Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner LD Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOX Interconnecting Duct - THC Stack NOX Stack NOX Stack SC2 Stack CO S		lżystem ope	ranons.	
All Lockout/Tagouts (1-5) are ACCOUNTED. Furnace and Afferburner Control Breakers are ON. Verify Emergency Pushbuttons are NOT ENGAGED. BUMP Motors and switch to "AUTO" Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Tank Recorded Adjustment (Y/N) Values Values Interconnecting Duct - NOX Interconnecting Duct - THC Stack NOX Stack SC2 Stack THC Stack CO Sta	Record Gas (Propane) Valve Position			
Furnace and Afferburner Control Breakers are ON. Verify Emergency Pushbuttons are NOT ENGAGED. BUMP Motors and swiftch to "AUTO" Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOX Interconnecting Duct - THC Stack NOX Stack SC2 Stack THC Stack CO S	TRICAL			Initial each
Furnace and Afferburner Control Breakers are ON. Verify Emergency Pushbuttons are NOT ENGAGED. BUMP Motors and swiftch to "AUTO" Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOX Interconnecting Duct - THC Stack NOX Stack SC2 Stack THC Stack CO S	All Lockout/Tagouts (1-5) are ACCOUNTED			
Verify Emergency Pushbuttons are NOT ENGAGED. BUMP Motors and switch to "AUTO" Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Tank Recorded Adjustment (Y/N) Values Values Interconnecting Duct - NOX Interconnecting Duct - THC Stack NOx Stack SC2 Stack CO St		O.V.		
Fumace Combustion Blower (M-220) Atterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOX Interconnecting Duct - THC Stack NOX Stack SC2 Stack THC Stack CO Stac	Furnace and Afterburner Control Breakers are	ON.		
Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx Stack SC2 Stack THC Stack CO Sta	Verify Emergency Pushbuttons are NOT ENGA	GED.		
Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx Stack SC2 Stack THC Stack CO Stack CO	BUMP Motors and switch to "AUTO"			
Interconnecting Duct - NOx 75.6 25 25 25 25 25 25 25 2	Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158)	n		
Intercorrecting Duct - THC 30 4 30	Calibrate CEM			Adjustment (Y/N)
Interconnecting Duct - THC 30.4 30 30.4	. Interconnecting Duct - NOx	75.1	25	o ć
	Intercornecting Duct - THC	30.4	•	\'
	Stack NOx	75.6	75	~
	Stack SO2	264226		121
Stack O2			30	<u> </u>
Charles CO	Stack CO	123.1	923	1.2700 15
- Stack CO 127 Letrons	Stack O2	5.97	<u> </u>	<u> </u>
	Stack CO	127.6	123	Letters
		s are (LOSED		
** Verify that all regulators for Calibration Gas Tanks are CLOSED	Datalogger/Computer is ON			
Datalogger/Computer is ON	Record Time (Computer Clock)			
Datalogger/Computer is ON				
Datalogger/Computer is ON Record Time (Computer Clock)		444 2010 045 70	001	
Datalogger/Computer is ON Record Time (Computer Clock) Record Ambient Temperature (TIT-300)	kecora Ambient Humidity (call Weather Service	oo4-3010 or 945-70	ω <i>υ)</i>	
Datalogger/Computer is ON Record Time (Computer Clock)	Pre - Spike Activities			
Datalogger/Computer is ON Record Time (Computer Clock) Record Ambient Temperature (TIT-300) Record Ambient Humidity (call Weather Service 664-3010 or 945-7000)				
Datalogger/Computer is ON Record Time (Computer Clock)Record Ambient Temperature (TIT-300)Record Ambient Humidity (call Weather Service 664-3010 or 945-7000) Pre - Spike Activities	2/1/			
Datalogger/Computer is ON Record Time (Computer Clock) Record Ambient Temperature (TIT-300) Record Ambient Humidity (call Weather Service 664-3010 or 945-7000) Pre - Spike Activities Lock-out all Motors: Complete Exclusion Log	Lock-out all Motors; Complete Exclusion Log	nos		
Pre - Spike Activities	Lock-out all Motors: Complete Exclusion Log Secure Equipment Pad and Access Road w/ Cha	uns		

				Test Number		
LOADING/U	NLOADING (2	of 3)		Ramp-Up Rate:		
Date:				Soak Time:		
Time:				Soak Temp:		
FIELD ACTI	VITIES					Initial each iter
	urnace with Matei	ials and Therm	nocouples	For each rack bi	n, provide a descrip	tion in
			2 PARCES PA	terms of contents	s, appearance, moisi	
#/ 8	Rack A's Characteristic	s. 600 LBS	of piece	** Refer to loading	procedures for Instru	uctions.
OTAL BEFORE		Cin al 14/6 ((lan)	#3	Materia's	Initial Wt.(lbs)	Final Wt.('bs)
1500 LBS	Initial Wt.(lbs)	Final Wt.(lbs)	7 800	Materials 77 57 57 1		73 .65
	5TEEL OEB	36£ 465	350	<u> </u>	73 185	
TAL AFTER	367723			75	_	
1496	0	75U A	5-13-5	3333	Cupin Blace	43 LBS
	ROCK OEBRIS 3674BS	200 / 203	(X 3) (X 3) (X 3) (X 3)	2 4 4 A	CINDER BLICK 93 LBS	
	** Secure pipe to pr	event pipes from r	olling	Take Pictures		
#2 R	Rack B's Characteristic	s. 4.30 h.85				
		,-		#4		
TAL BEFORE	Initial Wt.(lbs)	Final Wt.(lbs)		Materials 14'	Initial Wt.(Ibs)	Final W [‡] ."Ibs)
1501	5" STL PAE 240405	240 LBS	- 200) <u>&</u> O		
AFTER 1501	240405		J 00	D ROX		
					·	4
	CLAY PAE	205405)	CINDER BLOCK	GNE KPS
	205185		E. S. W. A. L. Jack	Take Pictures	656 400	
_		. CC Cuilead Class	Dina ED Saikad Cine	los Blocks		
-	" SP-Spiked Steel Pipe		ripe, 3D-3piked Cilic nt. Clay Pipe. CD-Co			
	Total Weight of the t					
	-				•	
Mark Lo	ocations of Therm	ocouples				
	_ [
	#7_			:		Burner
	TNT -	\rightarrow \times				
	Door	ı	Rack B	ı	Rack A	
		, misself ar find some	######################################	osaan loonaan maraasaa		
				U i G all situ ma	rsonnel are accoun	tad for
Koli Ca	ills and Close Furn	land in	•		orsonner are account on initial this checkl	
	1000 J- 14			Close and secur		· y
-11	July -			11	-	
	-1- C-!! C!-	Waish CL1				
Compl	ete Spike Sample	Meigu Sheet				
** CEE N	NEXT PAGE FOR A	TERBURNER ar	d FURNACE STA	RT-UP SEQUENCE		4

STAR	T-UP (3 of 3)	Rmp-Up Time:
	13 FEB 96	Soak Time:
Time:		Soak Temp:
AFTER	RBURNER START-UP	Initial and record time for each item.
TUE	Start "I.D. FAN". Adjust far	speed to maintain a system draft < -0.5 In. WC
742	Start "Pre-Mix AIR BLOWER	'. Adjust fan speed to maintain <-0.5 ln.WC
(/)	Start "OXIDIZER" (Burner).	Adjust fan speed to maintain <-0.5 In.WC
V	Once the burner has started, the The pilot will then attempt to l	e control system will initiate a purge sequence. ght the burner at low fire.
H3W	Start "DATALOGGER" Push	outtons on the Computer.
120		0 Deg. F. Adjust fan speed to maintain <-0.5 In.WC
U	€ 600 F: :Time	Once the burner is at low fire, burner control will be released to the operator.
	बे 1200 F: :Time	The operator must adjust gas flow and ID fan speed to maintain temperature
	49 1800F: :Time	1800°F and system draft â _j <-0.5 In WC.
FURN.	ACE START-UP	Initial and record time for each item.
TAA	Set Bleed Air Damper to 7	5%
TO A	Turn Furnace Key to "BLOV	VER" Position. Adjust ID fan speed to maintain <-0.5 In.WC
777	Set Controller to "MANUA	". Set controller output to 0.0
TAP	Turn Furnace Key to "BURN	ER" Position.
120	Verify "INTERLOCK OK" Lig	nt is energized.
	Once the hurner started the co	ontrol system will initiate a purge sequence.
	The pilot will then attempt to l	
MA	Open Bleed Air Valve to 1	00%
1/9.12	•	o Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's.
		ures during ramp-up hourly, on the control room log sheet.
	Once the burner is operating of	t low fire, burner control will be released to the operator. The operator must adjust
	ID fan speed to maintain <-0.	In.WC. afterburner temp \widehat{a} , 1800 Deg F, and furnace temp \widehat{a} , SOAK temperature.
THE	Manually Log Operating (arameters.
		record all operating parameters at least hourly. URES will vary from test to test.
	** USE NEXT PAGE(S) TO LO	OG OPERATING PARAMETERS
COOL	-DOWN	Initial and record time for each item
22	Turn Furnace Key to "BLO	VER" After lowering Furnace Temp to 200 Deg. F.
	STOP "OXIDIZER" and "AIR	BLOWER"
	STOP Computer Datalogg	er when all thermocouples indicate less than 150 Deg F.
	** FOLLOW THE FURNACE I	INLOADING PROCEDURES IN APPENDIX "R" OF HASP.

Bote	73 FEB 96			Ramp Up Rate: 100°F/hr. Soak Timo: 1 hr. Soak Timo: 600°F
]		Unit	
Tag	Description	[Onn	1700 1950 19:00 2000 2100 220 2300 2400
FURNACI	F	•		
P1T-232	Fuel Gas Pressure	,	In. WC	10.33 10.91 11.25 11.29 11.66 11.37 4.81 8.72
FIT-231	Fuel Gas Flow		CFH	76 86 109 117 136 111 40 41
P1T-222	Combustion Air Prossure		h.WC	24.17 24.58 24.64 24.57 24.24 24.85 24.38 24.34
FIT-221	Combustion Air Flow		CFH	1031/ 16261 10197 10145 10102 10202 10867 10807
P1T-158	Chamber Pressure		b.WC	-0.30-0.27 - 375x -45 -442227
TIT-201	Recorder Temperature		Dog.F	243 349 450 549 650 640 383 285
TIT-202	Furnece Exit Gas Temp (Control)		Deg.F	247 352 452 554 654 643 383 286
TIT-203	Meterial Thermocouple #1		Deg.F	166 311 409 515 614 631 442 319
TIT-204	Meterial Thermocouple #2	4	Dag.F	200 320 430 539 638 644 380 299
TIT-205	Material Thermocouple #3	4	Deg.F	134 219 298 368 444 506 424 33?
T1T-206	Meterial Thermocouple #4	4	Dog.F	195 291 376 477 525 521 316 231
FIT-207	Material Thermocouple #5	4	Deg.F	281 387 438 589 689 672 409 311
AFTERBU	IRMER			
TIT-131	Combustor Burner Temp. Control		Dag. F	1770 1828 1842 1799 1762 1848 1832 1741
FIT-149	•	. 1	criii	23542183 2135 2123 2089 2080 2431 2502
P17-151	Fumes Pressure (Furnace Draft)		hWC	0.49 0.44 5.40 .29 .28 . 27 .56 .66
5	Combustor Temperature		Dog. F	1053 1862 1775 1865 1860 1830 1826 1798
TIT-145 LFA PIT-133	Fuel Pressure		PSIG .	0.580.44 0.26 -11 -10 -08 -27 -59
TIT-121	Fuel Gas Flow	CEA -	ersi	0.580.44 b.26 -11 -10 -08 -27 -59 877 7/3 430 338 282 236 4/3 868
CEM		,		
MOx-B	Interconnecting Duct NOx		pp <i>rn</i>	-0.9 -0.3 0.9 1.4 2.5 1.4 -1.2 -1.3
THC-B	Interconnecting Duct THC	•	90 <i>0</i> 77	37.0 425 37.2 32.1 26.9 31.9 69.3 67.0
	•			
CO	Steck's CO		opm	0.0 0.8 0.0 0.0 0.0 0.0 0.0 00 -1.3-1.3-1.4 -1.5 -1.4 -1.5 -1.5 -1.4
THC	Stack's THC	·	ppm	
N Ox	Stack's NOx	•	ppro	49.0 48.1 44.3 59.7 32.3 31.5 59.3 55.5
S 02	Stack SO2		n om	7.0 1.0 1.5 1.0 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5
72	Stack's 02		%	11.24 11.68 7.53 9.37 2.80 14.00 14.48 11.48
C02	Stack's CO2	:	%	6,84650 834 9.20 4.66 4.44 6.58 6.22
117-300	Ambient Temp	4	Dog. F	52" 45.8 044.9 45.5
Weather Service	Relative Humidity			34% 475 528 56.0



			Test Number:	#4	
re -	START-UP (1 of 3)	Re	amp-Up Rate:	100°/Hr	
	Date: 14 FEB 96		Soak Time:	2 Hr	
	Time:		Soak Temp:	500"	
IECH	HANICAL			Initia	l each ite
Z	Inspection doors/manways are SECURED	Verify all v	alves, doors,	inspection ports, manwo	av, etc.
Zist (Gas Valves OPEN	have been	returned to a	position capable of sust	aining
2	View/Inspection Ports CLOSED	system ope			
Z	Record Gas (Propane) Valve Position	74	10		
LEC	TRICAL			Initia	l each ite
Z	All Lockout/Tagouts (1-5) are ACCOUNTED.				
20	Furnace and Afterburner Control Breakers are	ON.			
2	Verify Emergency Pushbuttons are NOT ENGAG	SED.			
	BUMP Motors and switch to "AUTO"				
	✓ Furnace Combustion Blower (M-220)	Terify field	selector swite	ches are in "AUTO" afte	2 r
	·				
	Afterburner Combustion Blower (M-130)	11	have been "Bl	UMPED" to verify opera	ations.
	· · · · · · · · · · · · · · · · · · ·	11	have been "Bi	UMPED" to verify opera	ations.
	Afterburner Combustion Blower (M-130)	11	have been "Bi	UMPED" to verify oper	ations.
Œ	Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158)	all motors i	Recorded	CMPED" to verify opera Adjustment (Y/N)	ations.
	Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE	all motors		Adjustment (Y/N)	ations.
Ŧ	Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM	all motors of al	Recorded Values		ations.
Ŧ	Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx	Tank Values 75.6 31.1	Recorded Values 75 31	Adjustment (Y/N)	ations.
	Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC	Tank Values 15.6 31.1	Recorded Values 75 31	Adjustment (Y/N)	ations.
ŧ	Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx	Tank Values 75.6 31.1	Recorded Values 75 31	Adjustment (Y/N) // // // //	ations.
Ŧ	Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx Stack SO2	Tank Values 15.6 31.1 75.6 126.4	Recorded Values 75 31 75 126	Adjustment (Y/N) // // // //	ations.
Ē	Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx Stack SO2 Stack THC	Tank Values 15.6 31.1 75.6 126.4 31.1	Recorded Values 75 31 75 126 31	Adjustment (Y/N) // // // //	ations.
	Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx Stack SO2 Stack THC Stack CO	Tank Values 75.6 31.1 75.6 126.4 31.1	Recorded Values 75 31 75 126 31 124.6	Adjustment (Y/N) // // // // // // // // //	ations.
Ē	Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx Stack SO2 Stack THC Stack CO Stack O2	Tank Values 15.6 31.1 75.6 124.0 5,97 4.89	Recorded Values 75 31 75 126 31 124.6 6.0	Adjustment (Y/N) // // // // // // // // //	ations.
	Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx Stack SO2 Stack THC Stack CO Stack CO Stack CO	Tank Values 15.6 31.1 75.6 124.0 5,97 4.89	Recorded Values 75 31 75 126 31 124.6 6.0	Adjustment (Y/N) // // // // // // // // //	ations.
	Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx Stack SO2 Stack THC Stack CO Stack CO Stack CO Stack CO Stack CO Stack CO The Stack CO Stac	Tank Values 15.6 31.1 75.6 124.0 5,97 4.89	Recorded Values 75 31 75 126 31 124.6 6.0	Adjustment (Y/N) // // // // // // // // //	ations.
	Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx Stack SO2 Stack THC Stack CO Stack CO ** I erify that all regulators for Calibration Gas Tanks Datalogger/Computer is ON Record Time (Computer Clock)	Tank Values 15.6 31.1 75.6 124.0 5,97 4.89	Recorded Values 75 31 75 126 31 124.6 6.0	Adjustment (Y/N) // // // // // // // // //	ations.
	Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx Stack SO2 Stack THC Stack CO Stack CO Stack CO Stack CO The Stack CO	Tank Values 15.6 31.1 75.6 126.4 31.1 124.0 5,97 4.89 are CLOSED	Recorded Values 75 31 75 126 31 124.6 6.0 4.9	Adjustment (Y/N) // // // // // // // // //	ations.
	Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx Stack SO2 Stack THC Stack CO Stack CO Stack CO Stack CO Atterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx Stack SO2 Stack THC Stack CO Stack CO Stack CO Atterburner Switch in REMOTE Calibration Generator Stack CO The stack So2 Stack THC Stack CO Stack CO Stack CO Stack CO Record Time (Computer Clock) Record Ambient Temperature (TIT-300)	Tank Values 15.6 31.1 75.6 126.4 31.1 124.0 5,97 4.89 are CLOSED	Recorded Values 75 31 75 126 31 124.6 6.0 4.9	Adjustment (Y/N) // // // // // // // // //	ations.
	Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx Stack SO2 Stack THC Stack CO Stack CO ** I erify that all regulators for Calibration Gas Tanks Datalogger/Computer is ON Record Time (Computer Clock) Record Ambient Temperature (TIT-300) Record Ambient Humidity (call Weather Service 5)	Tank Values 15.6 31.1 75.6 126.4 31.1 124.0 5,97 4.89 are CLOSED	Recorded Values 75 31 75 126 31 124.6 6.0 4.9	Adjustment (Y/N) // // // // // // // // //	ations.
	Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOX Stack SO2 Stack THC Stack CO Stack CO Stack CO ** I erify that all regulators for Calibration Gas Tanks Datalogger/Computer is ON Record Time (Computer Clock) Record Ambient Temperature (TIT-300) Record Ambient Humidity (call Weather Service 5)	Tank Values 15.6 31.1 75.6 124.0 5,97 4.89 are CLOSED	Recorded Values 75 31 75 126 31 124.6 6.0 4.9	Adjustment (Y/N) // // // // // // // // //	ations.

		Test Number	
LOADING/U	NLOADING (2, of 3)	Ramp-Up Rate:	
Date:	INLOADING (2 of 3)	Soak Time:	
Пте:		Soak Temp:	
FIELD ACTI	VITIES		Initial each item.
	urnace with Materials and Thermocouples	For each rack bin, provide a descr	intion in
roda ri	office with Materials and methocoopies	terms of contents, appearance, moi	
#/ #	Rack A's Characteristics.	** Refer to loading procedures for Ins	
600165	<i>p</i>		
er DE	Initial Wt.(lbs) Final Wt.(lbs)	Materials Initial Wt. (lbs)	Final Wt.(1bs)
EFORE 1500 LBS	STEEL DEG 367405 X	PIPE 57165	56 285
	367165	714	
FTER			
483 LBS	RUCK OF 35/ 485	CONCRETE BOOK	109 LBS
		······································	
	** Secure pipe to prevent pipes from rolling	Take Pictures	
#2	Rack B's Characteristics.	3	
BEFORE		#JET	e
1501	Initial Wt.(lbs) / Final Wt.(lbs)	Materials Initial Wt.(lbs)	Final Wt.(!bs)
AFTER	STEE! PRE 240 LOS ===================================		
1501	240205	16707	
, ,	/		e
1	205 LBS \$ 205 LBS	Sious Blows	626
	205 485	Take Pictures 626 Ltd 5	
	and an all the test test and all the second and all	nder Blacks	
•	** SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Ci CP-Comtaminated Steel Piep, CC-Cont. Clay Pipe, CD-C		
	Total Weight of the two racks must be less than 3,000 Lbs		
	ford freight of the two factors are to the transfer and		
Mark L	ocations of Thermocouples		
	#7		Burner
	ROX X		
	Door Rack B	Rack A	
	4		
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
	II. and Class Forman Date	L'arife, all site parentnel are account	inted for
	alls and Close Furnace Door	Verify all site personnel are accou Have each person initial this chec	
Mila	word William	Close and secure furnace door.	and ar region
	MINA. MINGUNEY	He tose and secure juritace door.	
Compl	lete Spike Sample Weigh Sheet		

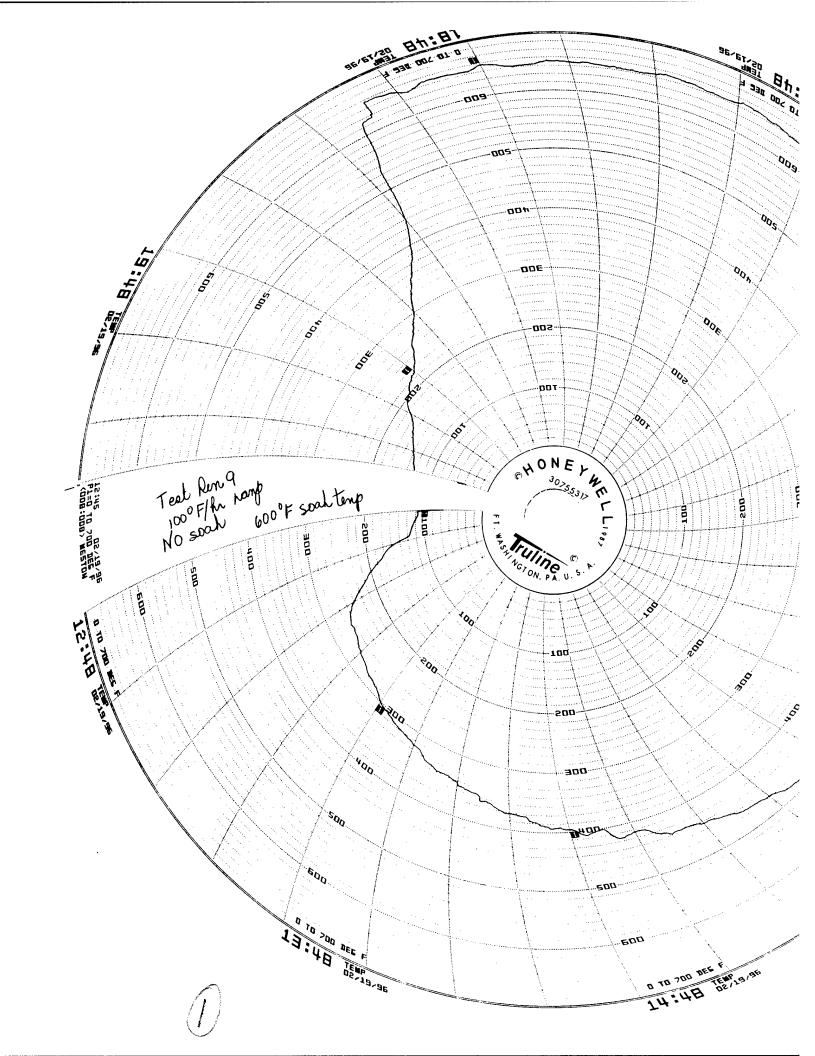
** SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

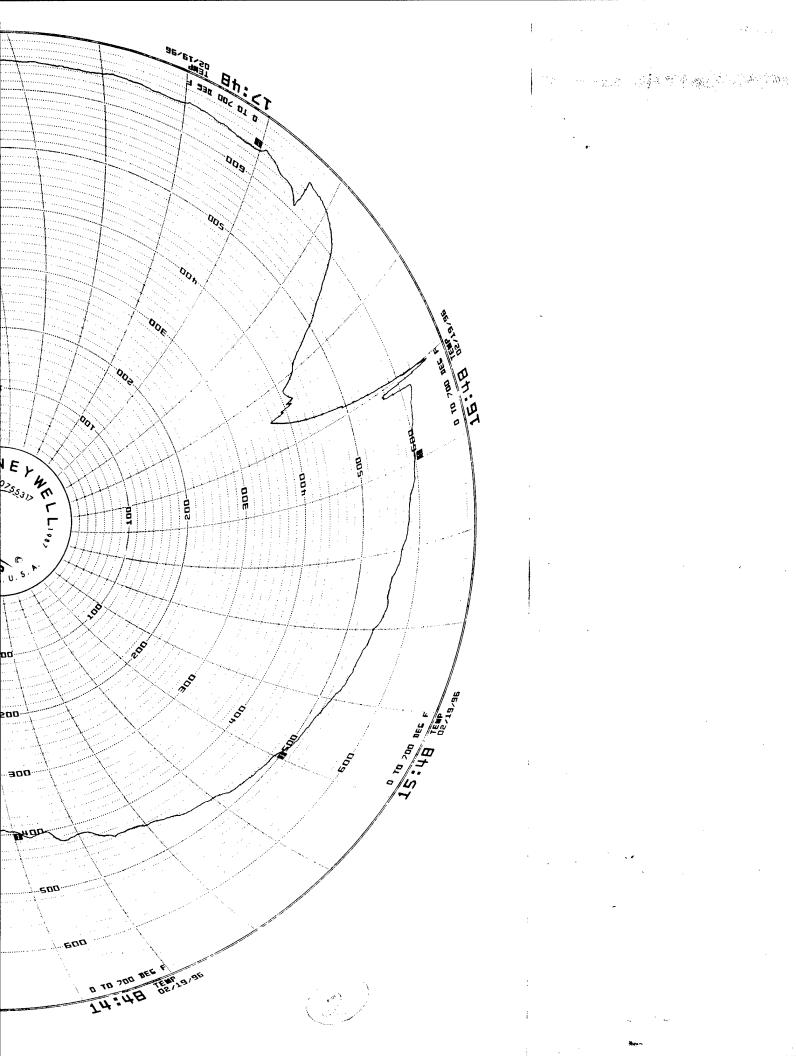
STAR	RT-UP (3 of 3)	Rmp-Up Time:	
	15 725 16	Soak Time:	·
Пте		Soak Temp:	
AFTE	RBURNER START-UP		Initial and record time for each item.
TGA	Start "I.D. FAN". Adjust fa	n speed to maintain a system draft	< -0.5 In. WC
1914		R". Adjust fan speed to maintain <-	
	Start "OXIDIZER" (Burner).	Adjust fan speed to maintain <-0.5	In.WC
U	Once the burner has started, t The pilot will then attempt to	he control system will initiate a purge seq light the burner at low fire.	ruence.
100	Start "DATALOGGER" Push	buttons on the Computer.	
GB		00 Deg. F. Adjust fan speed to mai	ntain <-0.5 In.WC
	₫: 600 F: :Time	1	control will be released to the operator.
	€ 1200 F: :Time	14	d ID fan speed to maintain temperature
	<u>g 1800F:</u> :Time	1800°F and system draft $\hat{a}_i \le -0.5$ In	#C.
FURN	ACE START-UP		Initial and record time for each item.
14	Set Bleed Air Damper to 7	25%	
12	Turn Furnace Key to "BLO	WER" Position. Adjust ID fan speed to	o maintain <-0.5 In.WC
A.P.		L" . Set controller output to 0.0	
TA	Turn Furnace Key to "BUR!	NER" Position.	
	Verify "INTERLOCK OK" Lig	ht is energized.	
70	Ongo the human stantal the		
	The pilot will then attempt to l	ontrol system will initiate a purge sequencies of the system will initiate a purge sequence of the system.	<i>?e.</i>
		-	
(14°) (17'11)	Open Bleed Air Valve to 1		
TIGEN		o Soak Temp. Maintain Ramp-Up F tures during ramp-up hourly, on the	
			to the operator. The operator must adjust
	ID fan speed to maintain <-0.	ii iow jire, burner control will be released 5 In.WC, afterburner temp @: 1800 Deg F.	, and furnace temp @, SOAK temperature.
TGB	Manually Log Operating F		, , , , , , , , , , , , , , , , , , ,
		record all operating parameters at least h TURES will vary from test to test.	nourly.
	** USE NEXT PAGE(S) TO LO	OG OPERATING PARAMETERS	
COOL	-DOWN		Initial and record time for each item.
22	Turn Furnace Key to "BLOV	NER" After lowering Furnace Temp t	o 200 Deg. F.
121	STOP "OXIDIZER" and "AIR	BLOWER"	
322	STOP Computer Datalogg	er when all thermocouples indicate	e less than 150 Deg F.
	** FOLLOW THE FURNACE U	INLOADING PROCEDURES IN APPEN	IDIX "R" OF HASP.

HOURL	Y D	TALE	XG [_	of	į
Bate:	<u> 75 </u>	FEB	. 7Ľ		_
Time					

Test Number: # 8
Ramp Up Rate: 100° F/r
Sealt Time: 2 hv
Sealt Tamp: 500° F

Tag	Description	Unit	13:00 1400 1500 1600 1700 1900 1900	
148	Description		Time:	L
FURNACE	•			
P1T-232	Fuel Gae Pressure	h.WC	9.25 9.91 11.19 11.80 11.64 11.71 3.81	
FIT-231	Fuel Gas Flow	CFH	67 79 90 114 99 97 -1	
P1T-222	Combustion Air Pressure	h.WC	23.42 13.69 23.42 13.67 1577 23.89 22.25	
FIT-221	Combustion Air Flow	CAH	10342 10 244 10764 104 28 1073 105792 13021	
P1T-158	Chamber Pressure	PMC	-0.97-70-70-0.61-05-0.58-91	
TIT-201	Recenter Temperature	Deg.F	221 344 432 544 550 544 143	<u> </u>
TIT-202	Furnece Exit Gas Temp (Control)	Deg.F	225 347 437 548 553 550 143	
TIT-203	Material Thermocouple #1	Dog.F	198 314 406 513 520 517 148	
TIT-204	Meterial Thermocouple #2	Dag.F	158 248 313 401 440 456 210	ļ
TIT-205	Material Thermocouple #3	Dog.F	13/ 183 377 488 528 529 258	ļ <u>.</u>
T1T-206	Material Thermocouple #4	Dog.F	158 285 368 471 489 485 174	
FIT-207	Material Thermocouple #5	Deg.F	26/378457 574 574 158	L
AFTERBUI	RMER			
T1T-131	Combuster Burner Temp. Control	Dog. F	1829 1800 1806 1785 1829 1816 597	
FIT-149	Fumos Flow PPA	AFF	226/21422027203148619944400	
P1T-151	Furnos Prossuro (Furnoco Draft)	hWC .	8.43 0.32 0.16 0.23 0,23 8.24 1.99	
TIT-145	Combuster Temperature	Dog. F	184118621844 1828 1816 1830 532	
PIT-133	Fuel Pressure	PSI G	0.60 0.43 0.35 0.43 0.520.34 .01	
TIT-121	Fuel Gas Flow CFH	DAM	905 693 603 673 794 563 1	
CEM				
NOx-B	Interconnecting Duct NOx	ppm	-0.2 0.2 6.9 1.8 1.0 0.98	
THC-B	Interconnecting Duct THC	ррт	23.5 24.0 26.9 22.4 26.4 27.9 -2.2	
c 0	Stack's CO	ррт	-1.5-05-0,5-0.5-0.5-0.5 0.0	
THC .	Stack's THC	до т	-4.6-4.8-4.7-4.9 -49-4.9-3.8	
N Ox	Stack's NOx	<i>ррт</i>	515 47.5 56.9 62.2 75.1 56.0 7	
\$ 02	Stock SO2	ppm .	1.0 1.0 1.0 05 05 0.5 .5	
uš	Stack's 02	%	11.52 11.72 13,00 1045 9.77 11.73 20%	
J 02	Stack's CO2	*	6.02 5.90 568 (,72 725 5.8606	
TIT-3000	Ambient Temp	Deg. F	57 5 55' 48' 43.2	
Weather Service	Relative Humidity		50% 51% (2% 7/2)	





	Test Number: # 9
Pre - START-UP (1 of 3)	Ramp-Up Rate: /00°/Hr
Date: 1946 FEB 96	Soak Time: Ohr Omin
Time:	Soak Temp: <u>600°</u>
MECHANICAL	Initial each ite
RDX Inspection doors/manways are SECURED	Verify all valves, doors, inspection ports, manway, etc.
Gas Valves OPEN	have been returned to a position capable of sustaining
View/Inspection Ports CLOSED	system operations.
75% Record Gas (Propane) Valve Position	
ELECTRICAL	Initial each ite
All Lockout/Tagouts (1-5) are ACCOUNTED.	
ROW Furnace and Afterburner Control Breakers are	ON.
Verify Emergency Pushbuttons are NOT ENGA	GED.
BUMP Motors and switch to "AUTO"	
Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE	Verify field selector switches are in "AUTO" after all motors have been "BUMPED" to verify operations.
Calibrate CEM	Tank Recorded Adjustment (Y/N) Values Values
Interconnecting Duct - NOx	75.6 75 N
Interconnecting Duct - THC	31.1 3 <i>i</i> Y
Stack NOx	75.6 75 Y
Stack SO2	126.4 125 Y
Stack THC	31 Y
Stack CO	## 1240 124.0 Y
Stack O2	5.97 6.0 Y
Stack CO2	4.89 4.9 N
** Verify that all regulators for Calibration Gas Tank	is are CLOSED
Datalogger/Computer is ON	
Record Time (Computer Clock)	
Record Ambient Temperature (TIT-300)	
Record Ambient Humidity (call Weather Service	664-3010 or 945-7000)
Pre - Spike Activities	
Lock-out all Motors; Complete Exclusion Log	
Secure Equipment Pad and Access Road w/ Cha	anis
Spike Test Materials and Furnace Test Plates	

Date: Time:	Test Number Ramp-Up Rate: Soak Time: Soak Temp:	#9 100°/Hr O hrs 600°	
ELD ACTIVITIES		Ir	nitial each item
/ Load Furnace with Materials and Thermocouples	li i	n, provide a descripti	
	41 -	, appearance, moistu	
# Rack A's Characteristics. #5	e Refer to loading	procedures for Instruc	tions.
SEFORE (1500 Initial Wt.(lbs) Final Wt.(lbs)	Materials	Initial Wt.(lbs)	Final Wt.;!bs)
FIER STEEL PIPE 94 LES	1.32	= STEEL DEB #4 367185	367285
CONCRETE DEB 3501BS SEE 3674BS Secure pipe to prevent pipes from rolling	Take Pictures	CINDER BLOCK 66 LBS	66185
#2 Rack B's Characteristics. #30 LBS BEFORE 1501 LBS Initial Wt.(Ibs) Final Wt.(Ibs) AFTER 1502 CLAY PRE 205 LBS	Materials Waterials	initial Wt.(lbs) -76 TNT CINDER BLEES	Final Wt. 'bs)
** SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cin CP-Comtaminated Steel Piep, CC-Cont. Clay Pipe, CD-C Total Weight of the two racks must be less than 3,000 Lbs.	ont. Debris	626 1.05	
Mark Locations of Thermocouples # 7 TET SPIKE X			Burner
Door Rack B			
Roll Calls and Close Furnace Door		rsonnel are accounte n initial this checklis e furnace door.	

** SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

STAR	RT-UP (3 of 3)	Rmp-Up Time:	
Date	*****	took Time:	
Time	:	Soak Temp:	
AFTE	RBURNER START-UP		Initial and record time for each item.
	Start "I.D. FAN". Adjust fan	speed to maintain a system dro	aft < -0.5 In. WC
	Start "Pre-Mix AIR BLOWER	'. Adjust fan speed to maintain	<-0.5 In.WC
	Start "OXIDIZER" (Burner).	Adjust fan speed to maintain <-(0.5 In.WC
	Once the burner has started, the The pilot will then attempt to li	e control system will initiate a purge : ght the burner at low fire.	sequence.
	Start "DATALOGGER" Pushl		
		0 Deg. F. Adjust fan speed to m	naintain <-0.5 In.WC
<u> </u>	@ 600 F: :Time		ner control will be released to the operator.
	€ 1200 F: :Time	- 1	and ID fan speed to maintain temperature
	@ 1800F: :Time	1800°F and system draft 'a <-0.5	
FURN	ACE START-UP		Initial and record time for each item.
	Set Bleed Air Damper to 7	5%	
	Turn Furnace Key to "BLOV	/ER" Position. Adjust ID fan speed	d to maintain <-0.5 In.WC
	Set Controller to "MANUAL	". Set controller output to 0.0	
	Turn Furnace Key to "BURN	ER" Position.	
Z	Verify "INTERLOCK OK" Ligit	nt is energized.	
	Once the burner started, the co	ntrol system will initiate a purge sequ	ence.
	The pilot will then attempt to li	• • •	
TES	Open Bleed Air Valve to 1	00%	
BB.	Ramp-Up Furnace Temp to	Soak Temp. Maintain Ramp-U	p Rate, System Draft and Temp's.
		res during ramp-up hourly, on t	•
	Once the burner is operating a	low fire, burner control will be relea	sed to the operator. The operator must adjust
	ID fan speed to maintain <-0.5	In.WC, afterburner temp @ 1800 Deg	g F, and furnace temp @ $SOAK$ temperature.
43	Manually Log Operating P	arameters.	
		ecord all operating parameters at lea	ist hourly.
	SOAK TIMES and TEMPERAT	URES will vary from test to test.	
		G OPERATING PARAMETERS	
COOL	-DOWN		Initial and record time for each item.
103	Turn Furnace Key to "BLOW	ER" After lowering Furnace Tem	p to 200 Deg. F.
QB.	STOP "OXIDIZER" and "AIR	BLOWER"	
	STOP Computer Datalogge	er when all thermocouples indic	ate less than 150 Deg F.
	** FOLLOW THE FURNACE U	NLOADING PROCEDURES IN APP	PENDIX "R" OF HASP.

HOURLY	DATALOGof 9 <i>FEB</i>
Time:	

Test Number: # 9

Ramp Up Rate: 100 F hr.

Soak Time: No SON/(TIME

Soak Tamp: 600 F

7	Description	Unit								1-3				
Tag	Description		1300 Time:	1400	1500	1600	1700	1800	1900	200		11		
FURNACE	•			1	T	1	I	T		1 1		1	_T	
P1T-232	Fuel Gas Pressure	h.WC	7.76	10%	10.96	11.57		11.98	11.78	397				
FIT-231	Fuel Gas Flow	CFH	/	77	87	107	M	138	122	-/				 ļ
PIT-222	Combustion Air Pressure	h.WC	22.3/	22.87	23.03	<i>2343</i>	1	237/	23.64	21.89				
FIT- 2 21	Combustion Air Flow	CFH	11653	10684	10008	10616	5	10536	10584	12859				
P1T-158	Chamber Pressure	h.WC	34	32	57	49	5	7.53	58	-0.46				
TIT-201	Recorder Temperature	Deg.F	120	3/2	421	509	E	644	647	2/2				
TIT- 20 2	Furnace Exit Gas Temp (Control)	Dog.F	121	3/5	424	5/2	\mathcal{D}	649	651	211				
TIT-203	Material Thermocouple # 5	Deg.F	1//	260	360	448		560	586	168				
T1T-204	Material Thermocouple #2	Deg.F	80	195	282	346	R	483			 			 ļ <u>-</u>
TIT-205	Material Thermocouple #3	Deg.F	79	224	328	427	E	604	623	326	 			
TIT-208	Material Thermocouple #4	Deg.F	1/2	<i>273</i>	364	440	A	565	572	186				
717- 20 7	Material Thermocouple #5	Deg.F			444		D	680	675	233				
AFTERBU	RNER	AVE	102	260	356	439		579	546	241				
T1T-131	Combustor Burner Temp. Control	Dag. F	1793	1791	1805	1783	1	1783	1807	1279				
FIT-149	Furnes Flow PPH	DEN	2371	2309	2102	2027	N	2174	2036	3/62				
P1T-151	Fumes Pressure (Furnace Draft)	MYC	.48	.38	.28	-26	9	ء30		1.20				
TIT-145	Combustor Temperature	Deg. F	1802	1770	1842	1798		1833	1822	1781				
P1T-133	Fuel Pressure	PS IG	.67	.45	.40	.38		.35	.3/	0.83				
TIT-121	Fuel Gas Flow	.oma	967	792	632	656		544	53/	1101	 			
CEM														
NOx-8	Interconnecting Duct NOx	ppm	-/.2	-,28	.3	1.9		2.0	1.4	-1.2				
THC-B	Interconnecting Duct THC	ррт	1000					23.0	71.7	0.2				
CO	Stack's CO	ррт	5	5	5	5		5	5	-0.5				
THC '	Stack's THC	ррт	9	9	9	9		7./	7./	-1.1				
NOx	Stack's NOx	ррт	453	47.9	543	61.9		48.6	45.6	39.7				
S 02	Stack SD2	ppm	-1.0	-1.0	-1.0	5		0.0	i	0,5				
į	Steck's 02	%	125	1160	11.77	10.55		10.88	11.07	13.25				
CO2	Stack's CO2	%	5.56	5.90	5.76	6.56		6.26	6.18	4.70				
TIT-300	Ambient Temp	Deg. F	70.8	71.0	16.2	57.6		55.0						
Weather Service	Relative Humidity		54.5%	543	68.18	99.99		100.0%						

er et	ADT 110 (4 of 2)	_	Test Number:	
Do	TART-UP (1 of 3) pate: <u>20 FEB 96</u> pate:	Re	Soak Time: Soak Temp:	150°/Hr 12Hr 550°
месна:	NICAL			Initial each
<i>211</i> In	espection doors/manways are SECURED	Verify all v	valves, doors, i	inspection ports, manway, etc.
<i>7</i> G	as Valves OPEN	have been	returned to a p	position capable of sustaining
??? / vi	iew/Inspection Ports CLOSED	system ope.	rations.	
22%) Re	ecord Gas (Propane) Valve Position	7/	70	
ELECTR	ICAL			Initial each
2/2 AI	ll Lockout/Tagouts (1-5) are ACCOUNTED.			
TC Fu	urnace and Afterburner Control Breakers are O	N.		
77 V	erify Emergency Pushbuttons are NOT ENGAGI	D.		
BL BL	UMP Motors and switch to "AUTO"			
, 	Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE	11		thes are in "AUTO" after EMPED" to verify operations.
# c	alibrate CEM	Tank Values	Recorded Values	Adjustment (Y/N)
	Interconnecting Duct - NOx	75.6	75	7
	Interconnecting Duct - THC	31.1	31	Ý
-	Stack NOx	75.6	15	N
	Stack SO2	126.4	126	<u>Y</u>
	✓ Stack THC	31.1	31	<u> </u>
	Stack CO	124.0	124,6	N Y
	Stack O2		/ ₄ [)	1
	✓ Stack O2 ✓ Stack CO 2	5,97 4,89		7
**	the state of the s	4.89	4.9	Υ
- 20	✓ Stack CO2	4.89		Υ
- 40	Stack CO 2 Verify that all regulators for Calibration Gas Tanks a	4.89		ΥΥ
- 40	Stack CO2 Stack CO2 Terify that all regulators for Calibration Gas Tanks and allogger/Computer is ON Record Time (Computer Clock) Record Ambient Temperature (TIT-300)	4.89 re CLOSED	4.9	Y
Dc	Stack CO2 Terify that all regulators for Calibration Gas Tanks and allogger/Computer is ON Record Time (Computer Clock) Record Ambient Temperature (TIT-300) Record Ambient Humidity (call Weather Service 664)	4.89 re CLOSED	4.9	Y
Dc	Stack CO2 Sterify that all regulators for Calibration Gas Tanks and catalogger/Computer is ON Record Time (Computer Clock) Record Ambient Temperature (TIT-300) Record Ambient Humidity (call Weather Service 664) e - Spike Activities	4.89 re CLOSED	4.9	7
Dc Dc	Stack CO2 Terify that all regulators for Calibration Gas Tanks and allogger/Computer is ON Record Time (Computer Clock) Record Ambient Temperature (TIT-300) Record Ambient Humidity (call Weather Service 664)	4.89 re CLOSED	4.9	Y

	Test Number	#10		
DADING/UNLOADING (2 of 3)	Ramp-Up Rate:	150°/Hr 1 Hr		
Date: ZA FER 96	Soak Time:			
Пme:	Soak Temp:	550°		
ELD ACTIVITIES		Initial each item		
Load Furnace with Materials and Thermocoup	les For each rack hin r	provide a description in		
Load Fornace Will Materials and memocoop	11	ppearance, moisture, etc.		
#/ Rack A's Characteristics.	1	ocedures for Instructions.		
FORE RACK 6001B				
500 Initial Wt.(lbs) Final Wt.(lbs)	Materials 6 #5 Ir	nitial Wt.(lbs) Final Wt.(lbs)		
TER STEEL PRE 33 LBS	A STANCE -	STEEL OEB 364LBS		
473 33 485		3671.85 U		
		,		
CINDER BLOCK 128 LBS	THE WASTER THE REST OF THE RES	POCK DEBRI 348		
/33 LBS ** Secure pipe to prevent pipes from rolling	Take Pictures	367485		
1.0				
Rack B's Characteristics.				
Initial Wt.(lbs) Final Wt.(lbs) 757	Materials In	nitial Wt.(lbs) Final Wt./bs)		
		STEEL PIPE STEEL PI		
2 150/		#4 24018 240 LBS		
	> \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	-ROX		
CLAY PIPE PLAY PIPE	7737777	INDER BLOCK CINDER BL		
205 LBS 205 LBS	त्र करा करिता । विकास करिता करिता करिता करिता करिता । विकास करिता करिता करिता करिता करिता करिता करिता करिता कर परित्र करिता करिता । अस्ति करिता	626 185 627 4 85		
	Take Pictures			
** SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-S	Spiked Cinder Blocks			
CP-Comtaminated Steel Piep, CC-Cont. Clay Pi	ipe, CD-Cont. Debris			
Total Weight of the two racks must be less than :	3,000 Lbs.			
Mark Locations of Thermocouples				
		·		
#/	:	Burner		
Door Rack B	Rac	L A		
Door Rack B	NGC	^^		
CONTRACTOR OF THE PROPERTY OF				
7				
Roll Calls and Close Fyrnace Door	PI CONTRACTOR OF THE CONTRACTO	nel are accounted for.		
Mein 2. Klinging	li -	itial this checklist at left.		
Machen Mullay	Close and secure fur	nuce aoor.		
Complete Spike Sample Weigh Sheet				

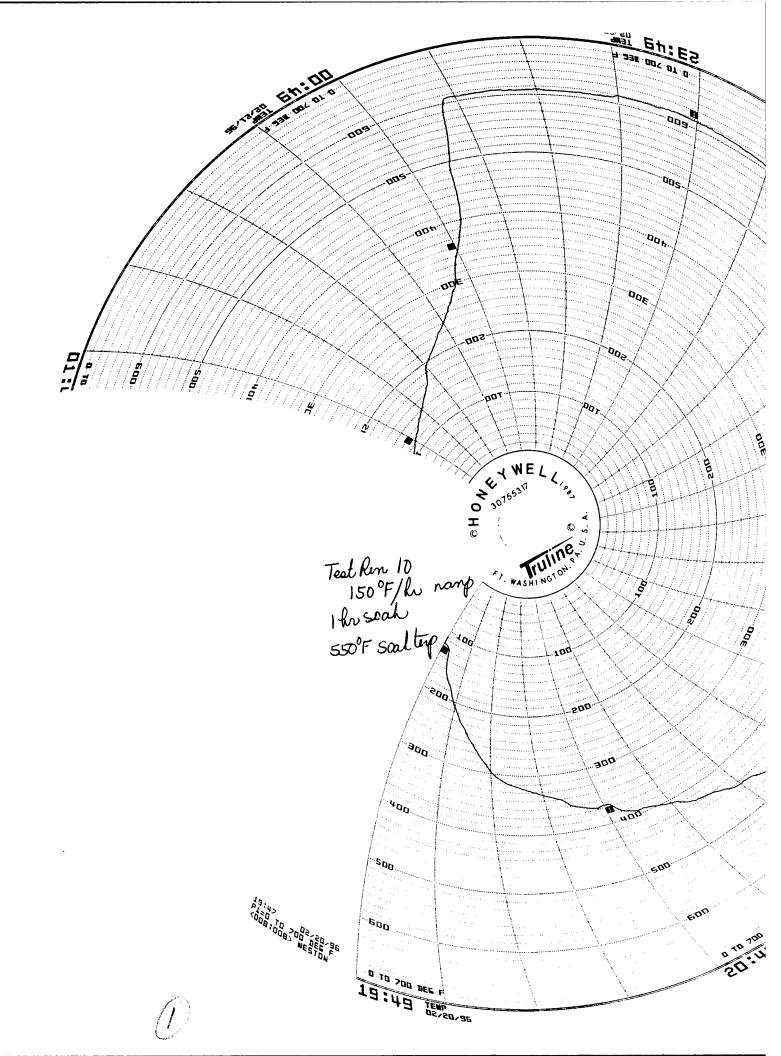
** SEE NEXT PAGE FOR AFTERBURNER and FURNACE START-UP SEQUENCE

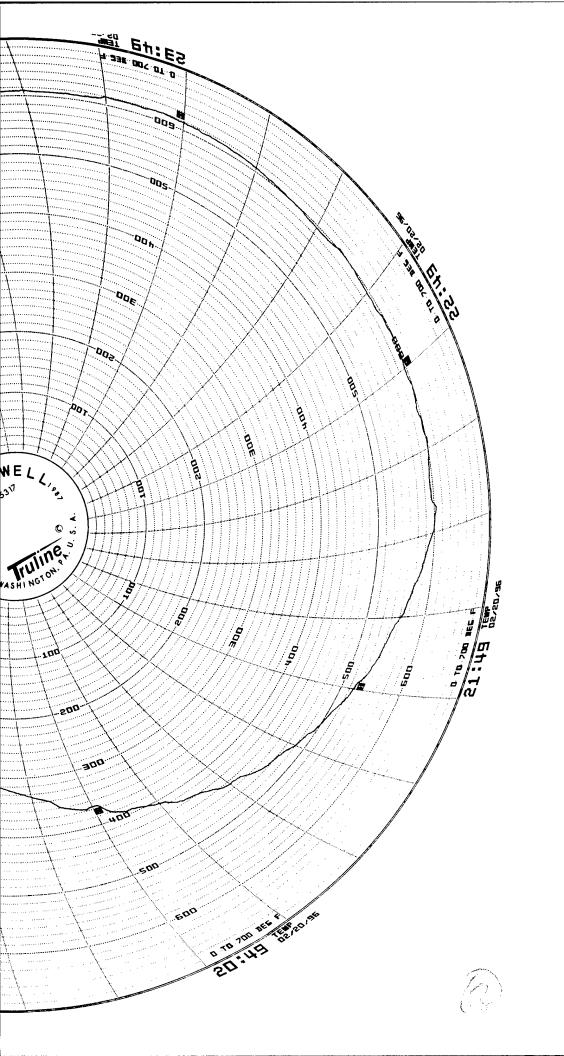
STAR' Date: Time:	T-UP (3 of 3)	Test Rate Rmp-Up Time : Soak Time: Soak Temp:	#10 150°/Hr 1 Hr 550°
FTER	RBURNER START-UP		Initial and record time for each item
CA	Start "I.D. FAN". Adjust fan speed to mai	intain a system dra	aft < -0.5 In. WC
23	Start "Pre-Mix AIR BLOWER". Adjust fan s	peed to maintain	<-0.5 In.WC
42	Start "OXIDIZER" (Burner). Adjust fan spe	ed to maintain <-0	0.5 In.WC
	Once the burner has started, the control system The pilot will then attempt to light the burner at	-	sequence.
92	Start "DATALOGGER" Pushbuttons on the	Computer.	
20	Warm-Up Burner up to 1800 Deg. F. Adju	ust fan speed to m	naintain <-0.5 In.WC
,	& 600 F: :Time Once the burn	ner is at low fire, burn	ner control will be released to the operator.
		=	and ID fan speed to maintain temperature
	© 1800F: :Time 1800°F and s	system draft @ <-0.5	In WC.
FURN	ACE START-UP		Initial and record time for each item
720	Set Bleed Air Damper to 75%		
20) 20)	Turn Furnace Key to "BLOWER" Position.	Adjust ID fan enege	d to maintain <-0.5 In WC
7/2	Set Controller to "MANUAL". Set control	•	a to maintain <-0.5 iii.wc
100	Turn Furnace Key to "BURNER" Position.	iei 001p01 10 0.0	•
	Verify "INTERLOCK OK" Light is energized	1	
150	Verily INTERESCE OR Light is energized	l.	
	Once the burner started, the control system will	•	ience.
	The pilot will then attempt to light the burner a	t low fire.	
98	Open Bleed Air Valve to 100%		
UB	Ramp-Up Furnace Temp to Soak Temp.	Maintain Ramp-U	p Rate, System Draft and Temp's.
	Record Furnace temperatures during ra	mp-up hourly, on t	the control room log sheet.
	Once the burner is operating at low fire, burner	r control will be relea.	used to the operator. The operator must adjust
	ID fan speed to maintain <-0.5 In.WC, afterbur	ner temp @, 1800 Deg	g F, and furnace temp \widehat{a}_i SOAK temperature.
Gh	Manually Log Operating Parameters.		
	Use the attached Log Sheet to record all operate SOAK TIMES and TEMPERATURES will vary	• •	ast hourly.
	** USE NEXT PAGE(S) TO LOG OPERATING	S PARAMETERS	
COOL	-DOWN		Initial and record time for each item
HE	Turn Furnace Key to "BLOWER" After lower	ering Furnace Tem	np to 200 Deg. F.
	STOP "OXIDIZER" and "AIR BLOWER"		
A	STOP Computer Datalogger when all the	ermocouples indic	cate less than 150 Dea F.

** FOLLOW THE FURNACE UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.

			Test Number: 44 /	
HELIR	LY DATALOG of	ã.	Ramp #p Rota: 150°F hr	
	: 20 FEB.96	17 .		
			Soak Time: 1 hr. Soak Tamp: 550° F	
Time	·	_		
		,	۷۶	<u></u>
			F, Leg	
	1			
Tag	Description	Unit	1900 2000 2100 2200 2300 0100	
	J	JL		
	_		Time:	
FURNAC	F			
			1/20/10/1/10 .010/9/10/2/10/10/10/10/10/10/10/10/10/10/10/10/10/	
P1T-232	Fuel Gas Pressure	h.WC	4.30 1241 12.12 12.69 1263 12:44 4.24	
		CFH	-1 56 143 133 122 113 -1	
FIT-231	Fuel Gas Flow	₩.		
P1T-222	Combustion Air Pressure	h.WC	22.3523.79.24.27.24.37.24.51.24.40.22.69	

FIT-221	Combustion Air Flow	CFH	12948 11241 10753 10609 10697 10711 13539	
MT 150	Object of December	h.WC	-0.32-0.43-0.24-0.22-0.19-0.24-050	
PIT-158	Chamber Pressure	22.00		
TIT-201	Recorder Temperature	Deg.F	58 154 381 535 597 611 287	
			58 158 384 540 600 612 282	
TIT-202	Furnece Exit Gas Temp (Control)	Deg.F		
T1T-203	Meterial Thermocouple #1	Deg.F	59131 335 475 548 572 319	
200		•	61 93 351 363 418 460 340	
TIT-204	Material Thermocouple #2	Dog.F		
TIT-205	Material Thermocouple #3	Deg.F	59 95 311 474 571 591 413	
111-203	material institutocoopee and	Dog.,	= 129 2/2:11/2 = D = 21 = 0	
T1T-200	Material Thermocouple #4	Deg.F	58 129 313447 507 531 238	
			60183 417 577 629 646 292	
91-207	Material Thermocouple #5	Dog.F	50 (17 22/ 4/2 52) 550 214	
	AVE.		59 127 326 468 534 558 319	
AFTERBU	INNER			
			1157 1911 1912 1922 1922 1972	
TIT-131	Combustor Burner Temp. Control	Dog. F	1653 1846 1803 1793 1832 1820 1776	
FIT-149	Fumos Flow PPI+	CFM	23872322 2135 2172 2108 1994 3426	
111-140	runus riew / // .	W M		
PIT-151	Furnez Pressure (Furnece Draft)	MIC	0.51 0.50 0.35 0.34 0.30 0.23 1.59	
			16781853 1816 1842 1830 1833 1783	
TIT-145	Combustor Temperature	Dog. F	128/0/833/1018/0/103/103/103	
P1T-133	Fuel Pressure	PSIG	0.820.700.48 0.42 0.32 0.29 0.84	
	. 41		1102979717 620 572 41-7 1096	
T1T-121	Fuel Gas Flow CFI4	<u>c</u> em	17.03 17.] 171 04 320 101 1070	
CEM				
			011 012 20 0 20 1 -01	
10x-8	Interconnecting Duct NOx	ppm	-0.4-0.2 1.3 3.0 2.3 2.2-0.1	
			5.2 100 100,0 91.9 96.9 100 4.7	
THC-B	Interconnecting Duct THC	ppm maps	5.5 100 100,0 11.1 10.1	
			-0.5-0.5-0.5-0.5-0.5-0.5	
CO	Stack's CO	ppm .		
THC -	Stack's THC	дог п	-04-1.2-1.1-1.2-1.2-1.3-1.3	
****		• •		
MO x	Stack's NOx	ppm	-0.5 44.4 51.2 48.8 43.4 49.5 46.8	
603	Stack \$02	ррт	2.0 3.5 3.0 3.5 4.8 4.5 4.0	
S 02	019-4 004	pq.e.i		
•	Stack's 02	%	0.20 11.70 11.42 11.23 11.98 12.07 1332	
	a. 11 aaa	•	D-14 11.70 G14 624 5.78 5.72 458	
CO2	Steck's CO2	%	-17 11-10 W 1 OLT 0,18 00 7-50	
		_ =	490 440 420	
TIT-300	Ambient Temp	Deg. F		
Weather Service	Relative Humidity		99 99 99% 99%	





Control of the second

Pre - S	START-UP (1 of 3) Date: 22 FEB 96 Time:		Test Number: Pamp-Up Rate: Soak Time: Soak Temp:	156°F/Hr. 1 Hr. 400°F
месн	IANICAL			Initial each item
752	Inspection doors/manways are SECURED	Verify all	valves, doors, i	nspection ports, manway, etc.
20	Gas Valves OPEN	have been	returned to a p	position capable of sustaining
20	View/Inspection Ports CLOSED	system op	erations.	
%	Record Gas (Propane) Valve Position	· · · · · · · · · · · · · · · · · · ·		
EC.	TRICAL			Initial each item
22	All Lockout/Tagouts (1-5) are ACCOUNTED.			
W	Furnace and Afterburner Control Breakers are ON			
28	Verify Emergency Pushbuttons are NOT ENGAGED			
- 27	BUMP Motors and switch to "AUTO"			
	Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE	11		thes are in "AUTO" after EMPED" to verify operations.
	Calibrate CEM	Tank Values	Recorded Values	Adjustment (Y/N)
	Interconnecting Duct - NOx Interconnecting Duct - THC			
	Stack NOx			
	Stack SO2			
	Stack THC Stack CO		- 	
	Stack O2			
	Stack CO		<u>:</u>	
	** Verify that all regulators for Calibration Gas Tanks are	CLOSED		
\mathbb{Z}	Datalogger/Computer is ON			
	1001 Record Time (Computer Clock)			
	7/-/ Record Ambient Temperature (TIT-300)			
	67.4% Record Ambient Humidity (call Weather Service 664-	3010 or 945-7	000)	
\mathbb{Z}	Pre - Spike Activities			
	Lock-out all Motors; Complete Exclusion Log			
	Secure Equipment Pad and Access Road w/ Chains			
	Spike Test Materials and Furnace Test Plates			

OADING/UNLOADING (2 of 3)	Ramp-Up Rate:	
	Soak Time:	
Time:	Soak Temp:	
IELD ACTIVITIES		Initial each item.
Load Furnace with Materials and Thermocouples	For each rack bin, provide a	
toda romace with materials and memocoopies	terms of contents, appearanc	=
Rack A's Characteristics. BEAKE 600185	** Refer to loading procedures	
1500 Initial Wt. (lbs) Final Wt. (lbs)	Materials Initial Wt.(II	os) Final Wt.(Ibs)
AFTER PIPE 66 LBS 63 LBS 1470	← STEEL 15 367	0:3815 37/185 85
CIMAZE BLOCK 98 LBS SEE	7. Dans	EARIS 354 455 185 RACK WT 35445
** Secure pipe to prevent pipes from rolling	Take Pictures Empty	RACK WT 3544RS
#2 Rack B's Characteristics. #3 WE 1501 TET—	1	ž.
Initial Wt.(lbs) Final Wt.(lbs) STEEL PIDE Steel Pipe 240#	Materials Initial Wt.(III	os) Final Wt.(lbs)
1501 240 LBS	7 (x) 7/1/7/1/7/1/7/1/7/1/7/1/7/1/7/1/7/1/7/1	
CLAY PIPE Clay Pipe 205# William	14 104 104 10 + CINOZ	Brack Cinder Block
205 LBS	Take Pictures 627	185 626 H
** SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cin	nder Blocks	
CP-Comtaminated Steel Piep, CC-Cont. Clay Pipe, CD-Co		
Total Weight of the two racks must be less than 3,000 Lbs.		
Mark Locations of Thermocouples	,	
#7	; ;	Burner
POX X Rack B	Rack A	
Door AGEN B	AGEN A	
		(Contact) (CO.)
Roll Calls and Close Futnace Door	l'erify all site personnel are a	ccounted for.
Him 2- Klinding	Have each person initial this	checklist at left.
Muchan Mullay	Close and secure furnace doo	r .

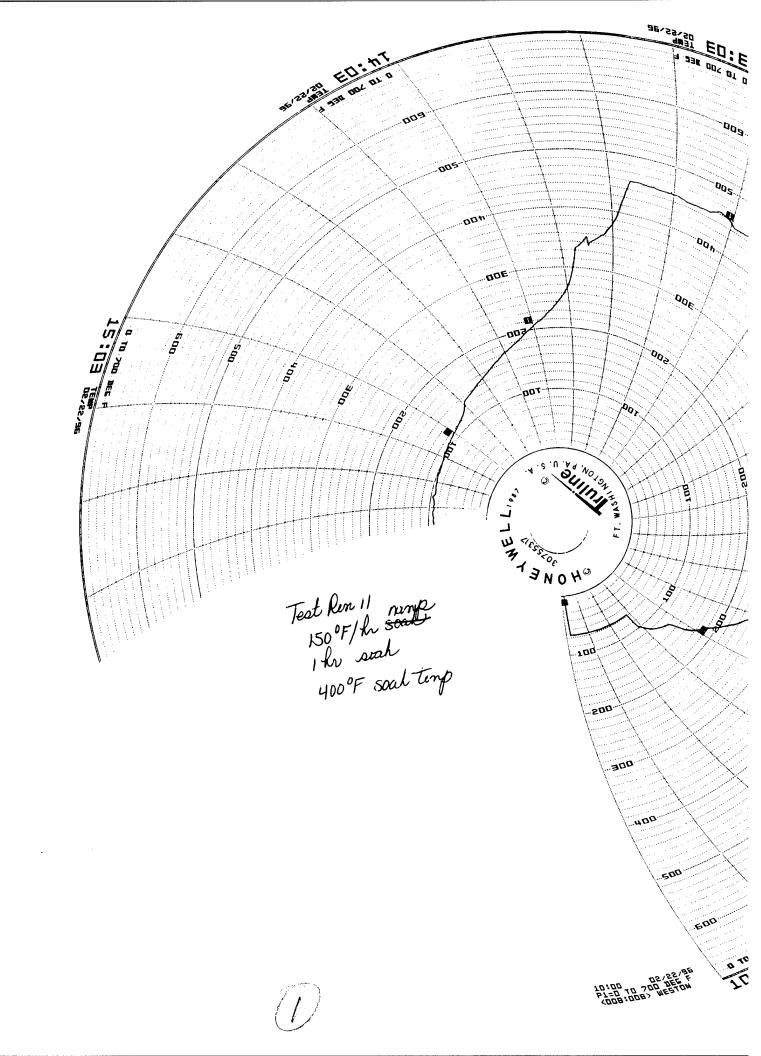
START	Γ-UP (3 of 3)	Rmp-Up Tii	me:
Date:		Soak Ti	
Time:		Soak Tei ·	mp:
AFTER	BURNER START-UP		Initial and record time for each item
22/	Start "I.D. FAN". Adjust	fan speed to maintain a syste	m draft < -0.5 ln. WC
-		VER". Adjust fan speed to mai	
221	Start "OXIDIZER" (Burner	r). Adjust fan speed to mainta	sin <-0.5 In.WC
		d, the control system will initiate a p to light the burner at low fire.	purge sequence.
	•	shbuttons on the Computer.	
V2X		1800 Deg. F. Adjust fan speed	d to maintain <-0.5 In.WC
<u> </u>	@: 600 F: :Time		e, burner control will be released to the operator.
	€ 1200 F: :Time		s flow and ID fan speed to maintain temperature
	@ 1800F: :Time	1800°F and system draft 'a	<-0.5 In WC.
FURNA	ACE START-UP		Initial and record time for each iten
22	Set Bleed Air Damper to	o 75%	
228	Turn Furnace Key to "Bl	OWER" Position. Adjust ID fan	speed to maintain <-0.5 In.WC
226	Set Controller to "MANI	JAL". Set controller output to	0.0 ,
Ex.	Turn Furnace Key to "Bl	JRNER" Position.	
Kg	Verify "INTERLOCK OK"	Light is energized.	
	Once the burner started, the	e control system will initiate a purg	e sequence.
	The pilot will then attempt	to light the burner at low fire.	
KZX	Open Bleed Air Valve t	o 100%	
			mp-Up Rate, System Draft and Temp's. r, on the control room log sheet.
			e released to the operator. The operator must adjust
- 1 /	Manually Log Operatin		00 Deg F, and furnace temp @ SOAK temperature.
		to record all operating parameters ATURES will vary from test to test	
	** USE NEXT PAGE(S) TO	LOG OPERATING PARAMETER	S
COOL-			Initial and record time for each iten
	Turn Furnace Key to "BL	OWER" After lowering Furnace	· Temp to 200 Deg. F.
	STOP "OXIDIZER" and "A	IR BLOWER"	
	STOP Computer Datalo	gger when all thermocouples	indicate less than 150 Deg F.
	** FOLLOW THE FURNIAC	E IINI OADING PROCEDIIRES IN	N APPENDIX "P" OF HACE

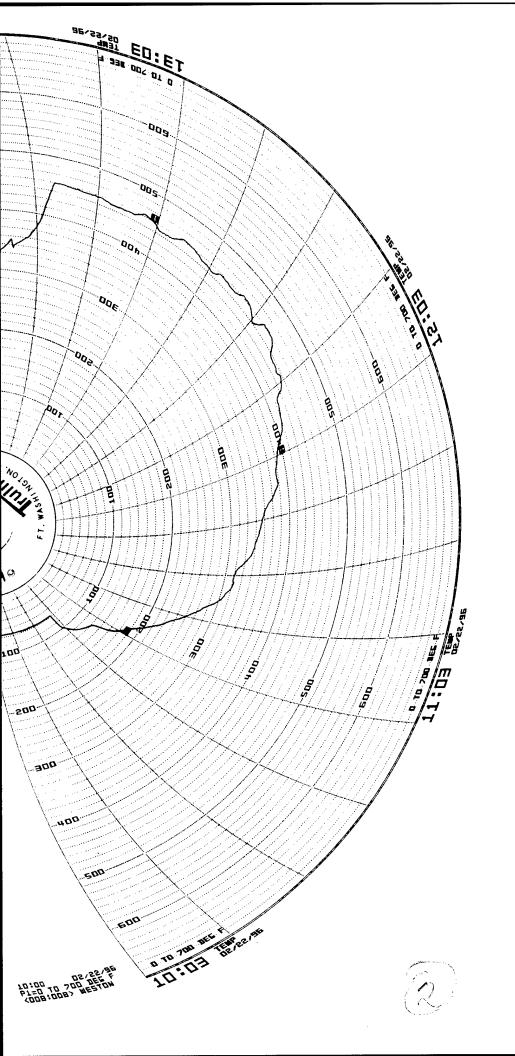
HOURL	DATA	LOG	_of	j
Data:	22	FEB	96	_
Time:				

.

Test Humber:	#//
Ramp Up Rete:	150°F/KU
Soak Time:	IW'
Soak Tamp:	400°F

r	1	7	
Tag	Description	Unit	1/00/200/300 1400/500
FURNAC	F		Time:
, 0,,,,,,,	•		
P1T-232	Fuel Gas Pressure	in.WC	8-35 11.31 11.11 4.05
FIT-231	Fuel Gas Flow	CAI	2 97 96 -1
P1T-222	Combustion Air Pressure	In. WC	2240 2303 2291 2115
FIT-221	Combustion Air Flow	CFH	11400 10547 10569 12564
P1T-158	Chamber Pressure	M.WC	-30 -24 -44 -25
TIT-201	Recorder Temperature	Deg.F	132 383 458 209
TIT- 2 02	Furnece Exit Gas Temp (Control)	Deg.F	133 386 46/ 206
TIT-203	Material Thormocoupie #1	Dog.F	1/7 390 468 267
TIT-204	Meterial Thermocouple #2	Deg.F	98 330 428 278
TIT-205	Material Thermocouple #3	Deg.F	83 224 304 233
TIT-206	Material Thermocouple #4	Deg.F	134 327 401 190
91-207	Material Thermocouple #5	Deg.F	148 425 493 231 116 339 418 23 9
AFTERBU	IRNER	AVE	110 221 717 221
TIT-131	Combustor Burner Temp. Control	Dag. F	1794 1808 1905 1803
FIT-149	Furnas Flow PPI+	ÆFÄ	234 2238 2141 2488
PIT-151	Fumes Pressure (Furnace Draft)	MWC	.44 .36 .27 .60
TIT-145	Combustor Temperature	Dag. F	1807 1820 1810 1842
P1T-133	Fuel Pressure	PS IG	-67 .48 .40 .43
TIT-121	Fuel Gas Flow CFH	ATT	968 741 624 900
CEM	•		
CEM			
NOx-8	Interconnecting Duct NOx	man	3 .9 .96
THC-B	Interconnecting Duct THC	ppm .	100.0 89.5 97.6 2.3
CO	Stack's CO	до т	5555
THC .	Stack's THC	др т	-1.3 -1.3 -1.3 -1.5
NOx	Stech's MOx	др т	42.6 45.6 45.6 47.0
802	Stack S02	др т	6.5 6.5 6.5 6.5
٠,	Stack's 02	%	11.68 11.50 12.13 13.12
CO2	Steck's CO2	*	5.90 6.04 5.68 5.0
TIT-300	Ambient Temp	Deg. F	71.1 71.5 73.3
Weather	·	way. /	67.48 63.28 63.18
Service	Relative Humidity		\$ 11CO \$ 20 CO 11O





_			Test Number:	
Pre -	START-UP (1 of 3) Date: 26 FEB 96	R	amp-Up Rate: Soak Time:	200°F hr
	Time:		Soak Temp:	1hr. 300°F
MEGI	LANUCAL			
MECE	HANICAL.			Initial each item.
20	Inspection doors/manways are SECURED	Verify all v	alves, doors, i	inspection ports, manway, etc.
22	Gas Valves OPEN	have been	returned to a p	position capable of sustaining
XIII.	View/Inspection Ports CLOSED	system ope	rations.	
70%	Record Gas (Propane) Valve Position			
ELEC	TRICAL			Initial each item.
221	All Lockout/Tagouts (1-5) are ACCOUNTED.			
221	Furnace and Afterburner Control Breakers are ON			
238	Verify Emergency Pushbuttons are NOT ENGAGED).		
TIB	BUMP Motors and switch to "AUTO"			
	Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE	11		ches are in "AUTO" after CMPED" to verify operations.
94	Calibrate CEM	Tank Values	Recorded Values	Adjustment (Y/N)
	✓ Interconnecting Duct - NOx	75.6	76	
	Interconnecting Duct - THC	30.1		N
	Stack NOx	75.1	24	<i>y</i>
	Stack SO2	126.4	126	<i>y</i>
	Stack THC	301	3/	ν
	Stack CO	124	124.8	
	Stack O2 Stack CO ₂	5.97	57	
	** Verify that all regulators for Calibration Gas Tanks are	· CLOSED	3.0	
THE STATE OF THE S	Datalogger/Computer is ON	CBOSES		
V	Record Time (Computer Clock)			
	Record Ambient Temperature (TIT-300)			
	Record Ambient Humidity (call Weather Service 564-3	3010 or 945-70	00)	
798	Pre - Spike Activities			
	Lock-out all Motors: Complete Exclusion Log			
	Secure Equipment Pad and Access Road w/ Chains			
	Spike Test Materials and Furnace Test Plates			

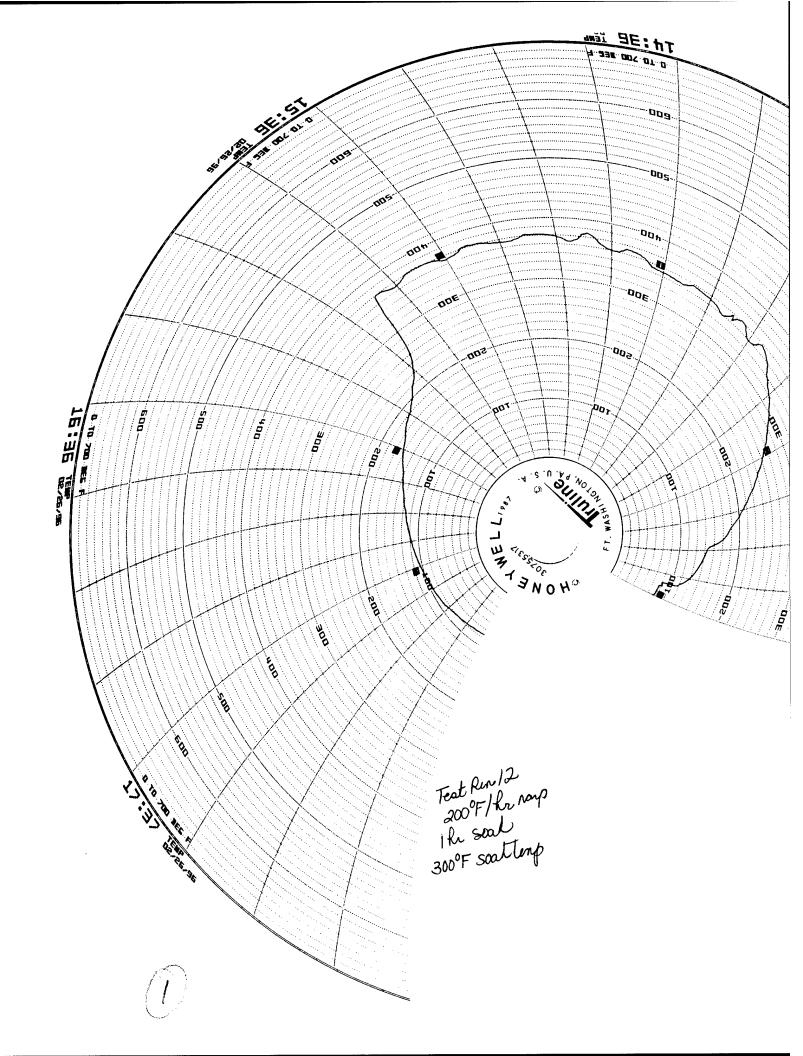
Date: 16 FEB 94	Test Number Ramp-Up Rate: Soak Time: Soak Temp:	200°F hr. 1 hr 300°F	
TIELD ACTIVITIES		i	Initial each item.
Load Furnace with Materials and Thermocouples	For each rack bit	n, provide a descripi	tion in
	terms of contents	, appearance, moisti	ure, etc.
# Rack A's Characteristics.	** Refer to loading	procedures for Instru	ctions.
BEFORE 600 LPS		-#5	5
1500 285 Initial Wt.(lbs) / Final Wt.(lbs)	Materials	Initial Wt.(lbs)	Final Wt.(!bs)
9FTER STEEL DEB 366 LBS	A CONTRACTOR OF THE PARTY OF TH	PIPE 69LBS	69285
1492 165		#4	
ROCK DEBRIS 360LBS & PARTS	XIBOUSES	CINDER BLOCK	97205
367 <i>LBS</i> ** Secure pipe to prevent pipes from rolling	Take Pictures	47485	
	Take Ticiores		
#2 Rack B's Characteristics. 430 485	#3		
OFFOR	ROX		F: 1 14/4 (H)
1500 LB5 Initial Wt.(Ibs) / Final Wt.(Ibs)	Meterials	Initial Wt.(lbs)	Final Wt.(!bs)
AFTER STEEL PIPE 240LBS			
1			
1500185		77	
CLAN PIPE 204 LBS		- CINDER BLOUS 626 LBS	626 LBS
204 485	Take Pictures	626 LBS	
** SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinc			
CP-Comtaminated Steel Piep, CC-Cont. Clay Pipe, CD-Co	ont. Debris		
Total Weight of the two racks must be less than 3,000 Lbs.			
Mark Locations of Thermocouples			
			-
#7			Burner
TET SPIKE DOOR BOOK B		ack A	
Door Rack B	, , , , , , , , , , , , , , , , , , ,	GCK A	
	same la estación de la company		
Roll Calls and Close Furnace Door	41	sonnel are accounte	
affin	;	initial this checklis	st at left.
Muchel Muller	Close and secure	furnace door.	
Devn 2. Elmons			
Complete Spike Sample Weigh Sheet			
** SEE NEXT PAGE FOR AFTERBURNER and FURNACE STA			

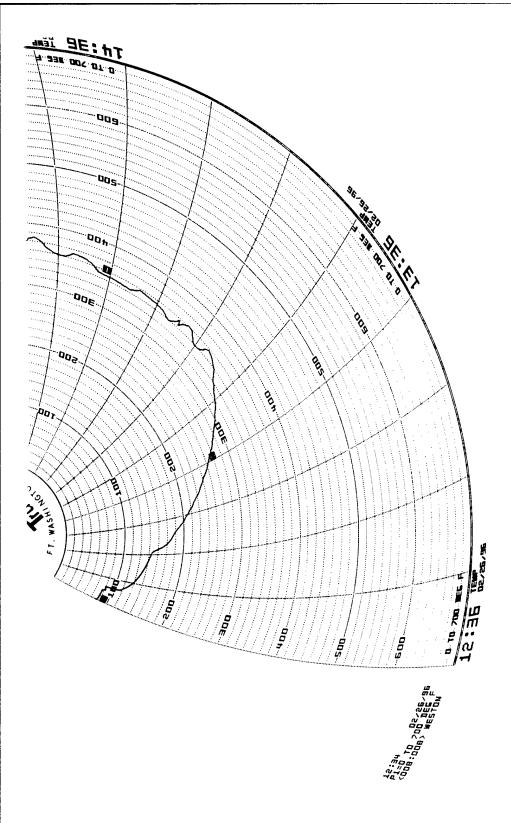
STAR	T-UP (3 of 3): 26 FEB 96		
Date Time	:	Soak Time: Soak Temp:	
AFTE	Start "Pre-Mix AIR BLOWER	n speed to maintain a system draft 2". Adjust fan speed to maintain <-0.5 Adjust fan speed to maintain <-0.5	0.5 In.WC
- 0 -	Once the burner has started, to The pilot will then attempt to l	he control system will initiate a purge seq light the burner at low fire.	uence.
B	Start "DATALOGGER" Push	buttons on the Computer.	
10P	Warm-Up Burner up to 186	00 Deg. F. Adjust fan speed to mai	ntain <-0.5 In.WC
	& 600 F: :Time & 1200 F: :Time & 1800F: :Time	1	control will be released to the operator. I ID fan speed to maintain temperature WC.
FURN	ACE START-UP		Initial and record time for each item.
	Set Controller to "MANUA Turn Furnace Key to "BUR! Verify "INTERLOCK OK" Lig Once the burner started, the control The pilot will then attempt to the Policy will then attempt to the Ramp-Up Furnace Temp of Record Furnace temperations of the burner is operating to ID fan speed to maintain <-0.	WER" Position. Adjust ID fan speed to L". Set controller output to 0.0 NER" Position. That is energized. The system will initiate a purge sequence light the burner at low fire. The soak Temp. Maintain Ramp-Up to Soak Temp. Maintain Ramp-Up to Soak Temp. at low fire, on the lat low fire, burner control will be released to In. WC, afterburner temp @, 1800 Deg F.	ce. Rate, System Draft and Temp's.
(JE)	Manually Log Operating I		
	11	record all operating parameters at least t TURES will vary from test to test.	hourly.
COOI	** USE NEXT PAGE(S) TO LO -DOWN	OG OPERATING PARAMETERS	Initial and record time for each item.
177'71'		WER" After lowering Furnace Temp	
12X	STOP "OXIDIZER" and "AIR		10 200 Deg. 1.
		ger when all thermocouples indicat	e less than 150 Deg F.
	_	UNLOADING PROCEDURES IN APPEN	

HOURL	(DATALOGof)	
Date:	26 FEB. 16	
Time:		

Test Number: # 12
Ramp-Up Rate: 200° hr.
Saak Time: 1 hr.
Saak Tamp: 300° F

									 ,		,		,	, , ,	
Tag	Description	Unit	13.00	1400	158	1600									i i
FURNACI			Time:												
			7.12	10.10	ימיי	4. 4				<u> </u>					 -
P1T-232	Fuel Gae Pressure	b.WC	1.43	10.69 86	10:11 ad	i i				 		 			
FIT-231	Fuel Gas Flow	CFH				-2									
P1T-222	Combustion Air Pressure	h.WC	21.60			2.07									
FIT-221	Combustion Air Flow	CFH	11458	. 4		12483			 						<u> </u>
P1T-158	Chamber Pressure	h.WC			-0.21	-21									
TIT-201	Recorder Temperature	Deg.F													
TIT-202	Furnace Exit Gas Temp (Control)	Deg.F	138			283				 					
T1T-203	Material Thermocouple #1	Deg.F		345		355									
TIT-204	Material Thermocouple #2	Dag.F	<u> </u>		180	228				ļ	-				
TIT-205	Material Thermocouple #3	Deg.F			<u> 187</u>	319									
T1T-200	Material Thermocouple #4	Dog.F	125		30¥	253									
[⊶] T-207	Material Thermocouple #5	Deg.F	140	359	376	305									L
AFTERBU	INNER TT-100 Exit GasT	. .	17/	264 320	344	262									
			1821	182	21795	1777									
TIT-131	Combustor Burner Temp. Control	Deg. F	1236				\dashv		 						
FiT-149	Fumes Flow	CFM	\rightarrow	0,36		-53	_	-	 						
P1T-151	Fumos Prossuro (Furnaco Draft)	MIC	1834			1788			 			 			
TIT-145	Combustor Temporature	Deg. F	0.66						 				<u> </u>		
P1T-133	Fuel Pressure	PSI G	1.1			153						ļ <u>.</u>			
T1T-121	Fuel Gas Flow	CFM	940	<u> </u>	688	791					<u> </u>	<u> </u>			i
CEM									 						
NOx-B	Interconnecting Duct NOx	до т	7.0	62	5.7	45									
THC-B	Interconnecting Duct THC	ppm	100	69,3	72,4	13.5									
CO	Steck's CO	прт	100	0.0	0,0	00									
THC	Steck's THC	•	-2.1	-1.3	-21	-2.1			 						
	Stack's NOx	ррт	506	191	533										
10 0x		ррт	1.0	•/•	1.0	1.0									
\$02	Stack 802	ppm ev	1860	1042	7.97					 					
`	Steck's 02	*	4,3	7/177	4.36	11.98									
CO2	Stach's CO2	%		4.66	عامدر	2./0	<u>_</u>		 L		<u> </u>	I			
TIT-300	Ambient Temp	Deg. F	78.3	80	90	76.6			 	 					
Wasther Service	Relative Humidity		57.4	52	54.2	55%									





for the arms

(2)

D	CTART UR (4 of 2)		Test Number:	#13	
Pre -	START-UP (1 of 3)	R	amp-Up Rate:	200°F/h	
	Date: <u>26 FEB 96</u>		Soak Time:	500 OF	
	Time:		Soak Temp:	300 7	
MECH	HANICAL			Initio	al agab itam
MECI	,			minc	al each item.
KM	Inspection doors/manways are SECURED	Ferify all	valves, doors, i	inspection ports, manu	ay, etc.
ZM	Gas Valves OPEN	have been	returned to a j	position capable of sus	taining
ZIN	View/Inspection Ports CLOSED	system ope	erations.		
70%	Record Gas (Propane) Valve Position				
ELEC	TRICAL			Initio	al each item.
1919	All Lockout/Tagouts (1-5) are ACCOUNTED.				
TAB	Furnace and Afterburner Control Breakers are ON	•			
Tab	Verify Emergency Pushbuttons are NOT ENGAGED) .			
TYP	BUMP Motors and switch to "AUTO"				
V	Furnace Combustion Blower (M-220)	l'erify field	d selector swite	ches are in "AUTO" aft	er
	Afterburner Combustion Blower (M-130)	all motors	have been "Bl	MPED" to verify oper	ations.
	Afterburner I.D Fan (M-158)				
	Place Afterburner Switch in REMOTE				
911	Calibrate CEM	Tank	Recorded	Adjustment (Y/N)	
////	•	Values	Values		
	Interconnecting Duct - NOx	75.1	74	2	-
	✓ Interconnecting Duct - THC	30.1	32	N	
	✓ Stack NOx	75.6	78	N	
	Stack SO2	124.4	124	~	1
	Stack THC	30.1	7/	- /	-
	Stack CO	124	1236	·/	
	Stack O2	5.97	15.6		
	Stack CO ₂	1/84	4.9	<i>'</i>	-
	** Verify that all regulators for Calibration Gas Tanks are	CLOSED		/	
AB.	Datalogger/Computer is ON				
V	Record Time (Computer Clock)				
	Record Ambient Temperature (TTT-300)				
	Record Ambient Humidity (call Weather Service 664-3	1010 or 945-70	100)		
72	Pre - Spike Activities				
-سندعنا	Lock-out all Motors: Complete Exclusion Log				
	Secure Equipment Pad and Access Road w/ Chains				
	Spike Test Materials and Furnace Test Plates				

	Test Number	
DADING/UNLOADING (2 of 3)	Ramp-Up Rate:	
Date: Time:	Soak Time: Soak Temp:	
ime.		
ELD ACTIVITIES		Initial each iten
Load Furnace with Materials and Thermo	l l	
the / Section State of Administration	terms of contents, appearance, ** Refer to loading procedures to	
#/ Rack A's Characteristics.	—————#5	n manuchons.
BEFORE Initial Wt. (lbs) Final Wt. (lbs)	Materials Initial Wt. (Ib.	s) Final Wt.(lbs)
500LBS STEEL DEB 365 LBS	HARAGE TO SEE 40	2185 42185
9FTER 367185	<u> </u>	74 100
// /L/C	14	
482 ROCK DEB 35\$ LBS	SSSS SSS CHOSE O	10CK 122 LBS
367185	(10000) 10000 Ell CINDER B	05
** Secure pipe to prevent pipes from rolli	ng Take Pictures	
#2 Rack B's Characteristics.	,	
BEFORE 430LBS	-#6 TET	
1500 LB Initial Wt.(lbs) Final Wt.(lbs)	Materials TET Initial Wt. (lb:	s) Final Wt.(lbs)
AFTER STEEL PAE 240 LBS		
1497 240185		
///		
CLAY PIPE 204185	A JULY CINDER B	3LOCK 623 LBS
204LBS #3_ ROX	Take Pictures 626 LB.	S
** SP-Spiked Steel Pipe, SC-Spiked Clay Pip	e, SD-Spiked Cinder Blocks	
CP-Comtaminated Steel Piep, CC-Cont.	Clay Pipe, CD-Cont. Debris	
Total Weight of the two racks must be les	s than 3,000 Lbs.	
7		
Mark Locations of Thermocouples		
#7		
TNT —X		Burner
	ck B Rack A	
Door Ra	ck B Rack A	
Roll Calls and Close Furnace Door	l'erify all site personnel are ac	
	l erify all site personnel are ac Have each person initial this c	hecklist at left.
	l'erify all site personnel are ac	hecklist at left.
	l erify all site personnel are ac Have each person initial this c	hecklist at left.

. .

	T-UP (3 of 3)	Rmp-Up Time:				
		Soak Time: Soak Temp:				
rTEI	RBURNER START-UP		Initial and record time for each item.			
1919		speed to maintain a system draft <				
		 Adjust fan speed to maintain <-0. 				
1/45	Start "OXIDIZER" (Burner).	Adjust fan speed to maintain <-0.5 I	n.WC			
•	Once the burner has started, th The pilot will then attempt to li	e control system will initiate a purge sequ ght the burner at low fire.	ence.			
	Start "DATALOGGER" Pushb	outtons on the Computer.				
TAB	Warm-Up Burner up to 180	0 Deg. F. Adjust fan speed to main	tain <-0.5 In.WC			
V	© 600 F: :Time	Once the burner is at low fire, burner c	ontrol will be released to the operator.			
	@ 1200 F: :Time	The operator must adjust gas flow and				
	© 1800F: :Time	1800°F and system draft @ <-0.5 In W	C.			
FURN	ACE START-UP		Initial and record time for each item.			
196	Set Bleed Air Damper to 75	5%				
TAB	Turn Furnace Key to "BLOW	/ER" Position. Adjust ID fan speed to	maintain <-0.5 In.WC			
TOP	Set Controller to "MANUAL"	". Set controller output to 0.0				
TOP	Turn Furnace Key to "BURNER" Position.					
	Verify "INTERLOCK OK" Ligh	nt is energized.				
	Once the burner started, the co	ntrol system will initiate a purge sequence				
,	The pilot will then attempt to light	ght the burner at low fire.	•			
THE	Open Bleed Air Valve to 1	00%				
TOP	Ramp-Up Furnace Temp to	Soak Temp. Maintain Ramp-Up Ro	ate, System Draft and Temp's.			
V	Record Furnace temperate	ures during ramp-up hourly, on the	control room log sheet.			
		low fire, burner control will be released t				
	ID fan speed to maintain <-0.5	In. WC, afterburner temp @; 1800 Deg F,	and furnace temp @; SOAK temperature.			
48	Manually Log Operating P	arameters.				
v	11	ecord all operating parameters at least ho	purly.			
	SOAK TIMES and TEMPERAT					
		G OPERATING PARAMETERS				
COOL	-DOWN		Initial and record time for each item.			
TQB	Turn Furnace Key to "BLOW	/ER" After lowering Furnace Temp to	200 Deg. F.			
122	STOP "OXIDIZER" and "AIR I	BLOWER"				
[XI]	STOP Computer Datalogge	er when all thermocouples indicate	less than 150 Deg F.			
	** FOLLOW THE FURNACE U	NLOADING PROCEDURES IN APPEND	DIX "R" OF HASP.			

, .

HOUR See	* 26 FEB 96			Tost Number: Ramp-Up Reta: Seak Time: Seak Tomp:	#/3 200 F 1 hr 500 F	/hv		
Tag	Description	Unit	0900 1000 1100 1215					
FURNAC	<u> </u>	_J L	Time:			<u> </u>	 <u> </u>	
P1T- 2 32	Fuel Gas Prossure	h.WC	8.67 1039 11.14 3.41					
FIT-231	Fuel Gas Flow	CFH	42 101 130 2					
PIT-222	Combustion Air Procesure	As. WC	13.12 13.37 1339 21.89					
FIT-221	Combustion Air Flow	CF H	10731 10113 9957 11981					
PIT-158	Chamber Pressure	h.WC	-0.28 - 24 - 21 0,42					
TIT-201	Recorder Temperature	Dag.F	173 379 565 268					
T1T-202	Furnece Exit Gas Temp (Control)	Dag.F	175 382 569 263					
T1T-203	Material Thermocouple #1	Dag.F	170 392 577 25					
TIT-294	Meterial Thermocouple #2	Dag.F	129 267 403 268					
TIT- 20 5	Meterial Thermocouple #3	Deg.F	117 270 463 385					
T)T-296	Material Thermocouple #4	Dog.F	145 313 487 262					
71 -26 7	Meterial Thermocouple #5	Dog.F	194 416 621 296					
AFTERBU	Motorial Thermocouple #5 #V9- TEMP- THE THE POST PAST	EMP.	151. 333 509 272 158. 330 493 255					
TIT-131	Combuster Burner Temp. Control	Dag. F	1820 1798 1850					
FIT-149	Furnes Flow	CAM	2233 2/54 2/93 3/14					
PIT-151	Fumos Prossuro (Furnoco Dreft)	MIC	0.41 0.34 0.32 1.19					
TIT-145	Combustor Temperature	Deg. F	1832 1790 1803 1823					
P1T-133	Fuel Procure	PSIG	0.64 0.31 0.39 0.80					
TIT-121	Fuel Gas Flow	CFM	920 782 617 1095					
CEM				<u>kaa_</u>				
			0.0 0.9 3.6 2.9					
NOx-B	Interconnecting Duct NOx	др т	73.8 43.9 32.0 0.4					
THC-B	Interconnecting Duct THC	ppm						
CO	Stacif's CO	дот	0.0 0.0 0.0 00					
THC .	Stack's THC	дот	2.1 1.7 3.7 1.8					
M Ox	Stack's NOx	ppm	46.9 56.9 54.8 51.6					
\$ 02	Stack SU2	рр т	1.0 1.0 1.5 2.5					
•	Stack's 02	*	10.30 9.48 9.52 11.47					
CO2	Stack's CO2	*	5.88 6.40 6.00 4.08					

847 73'

89 75%

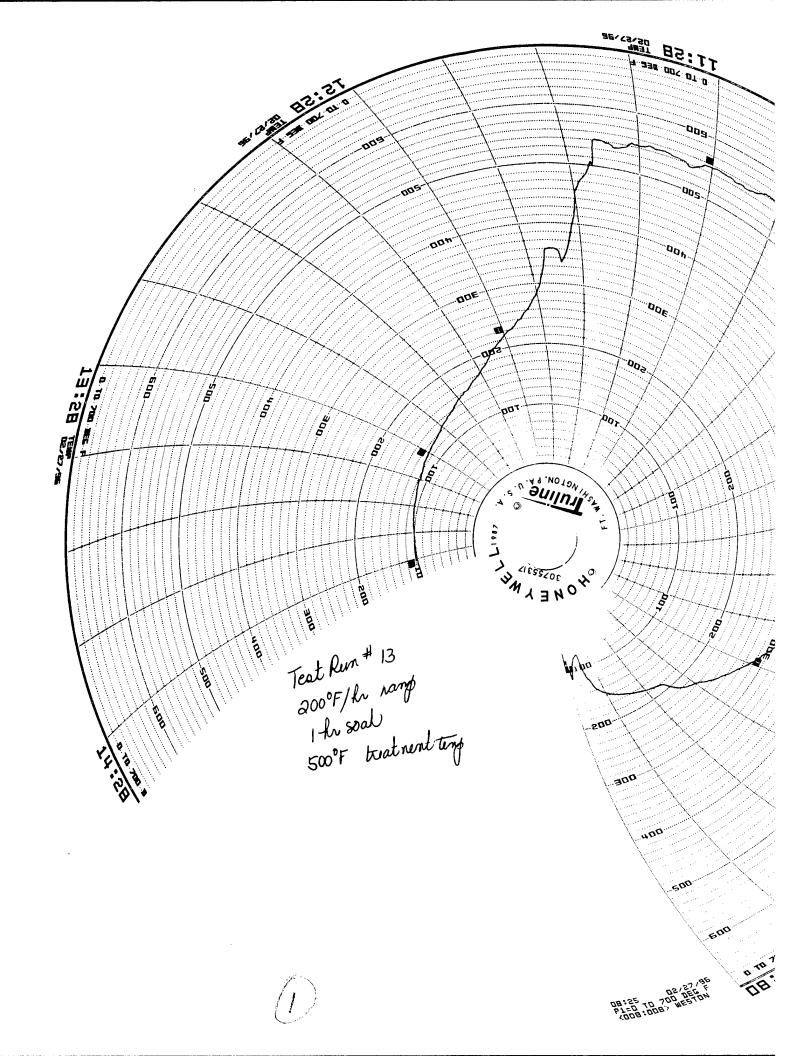
Deg. F

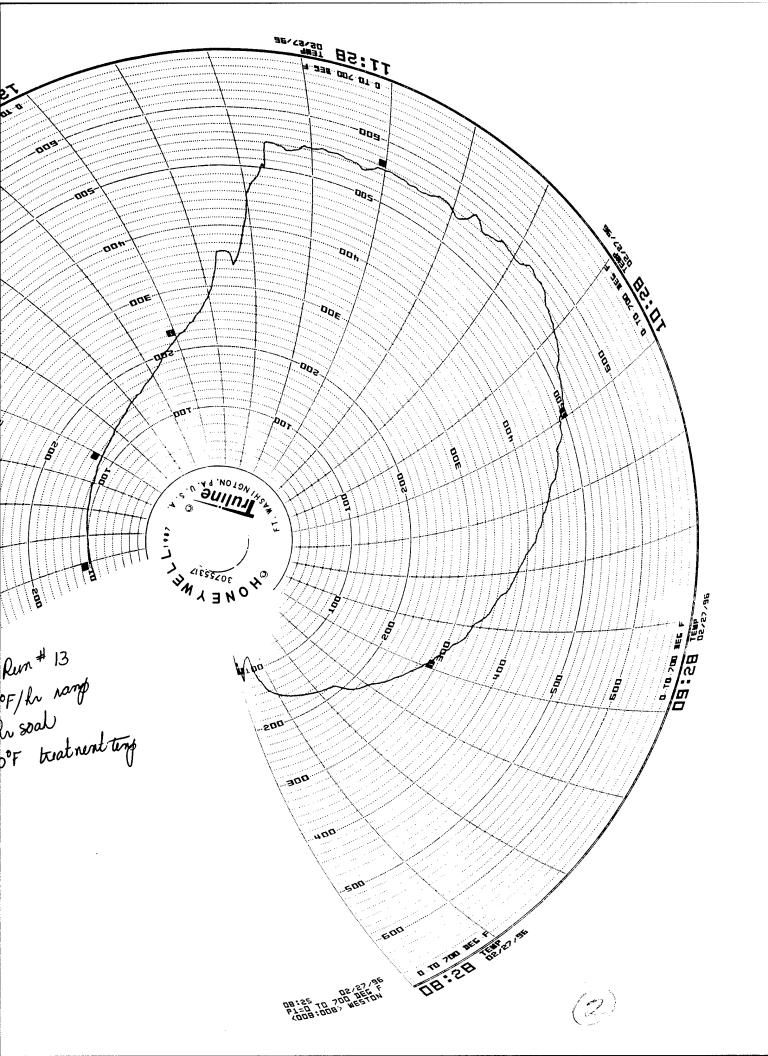
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60

Relative Humidity

TIT-300





		Test Number: #/4					
Pre - S	START-UP (1 of 3)	Ro	_	300°F/hr			
	Date: <u>27 FEB 96</u>	_	Soak Time: _ Soak Temp:	600°F			
	Iline.						
ŒСН	IANICAL		·	Initial each			
	Inspection doors/manways are SECURED	l'erify all v	valves, doors, i	nspection ports, manway, etc.			
(2)	Gas Valves OPEN	have been	returned to a p	position capable of sustaining			
R2/1	View/Inspection Ports CLOSED	system ope	rations.				
0%	Record Gas (Propane) Valve Position						
ELEC'	TRICAL			Initial each			
	All Lockout/Tagouts (1-5) are ACCOUNTED.						
2B	Furnace and Afterburner Control Breakers are ON.						
(D	Verify Emergency Pushbuttons are NOT ENGAGED	•					
QB	BUMP Motors and switch to "AUTO"						
	Furnace Combustion Blower (M-220) Afterburner Combustion Blower (M-130) Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE	11		ches are in "AUTO" after MPED" to verify operations.			
24	Calibrate CEM	Tank Values	Recorded Values	Adjustment (Y/N)			
	✓ Interconnecting Duct - NOx	75.6	74				
	Interconnecting Duct - THC	3/./					
	Stack NOx	75.6	75-				
	Stack SO2	126.4	123				
	Stack THC	3/1/	3/				
	Stack CO	124	123.8	7			
	Stack O2	5.97	5.7				
	Stack CO ₂	4.89	4.7				
	** Verify that all regulators for Calibration Gas Tanks are	CLOSED					
	Datalogger/Computer is ON						
	Record Time (Computer Clock)						
	Record Ambient Temperature (TIT-300)						
	Record Ambient Humidity (call Weather Service 664-3	3010 or 945-70	000)				
1/2	Pre - Spike Activities						
	Kock-out all Motors: Complete Exclusion Log						
•	Secure Equipment Pad and Access Road w/ Chains						
	Spike Test Materials and Furnace Test Plates						

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DADING/UNLOADING (2 of 3)	Ramp-Up Rate:	
Date:	Soak Time: Soak Temp:	
ELD ACTIVITIES		Initial each item
····		
Load Furnace with Materials and Thermocouples	For each rack bin, provide a desc terms of contents, appearance, mo	
#/ Rack A's Characteristics.	** Refer to loading procedures for In	
600 18	#5	
BEFORE 1500LB Initial Wt.(lbs) Final Wt.(lbs)	Initial Wt. (lbs)	Final Wt.(lbs)
AFTER STEEL OEB 359 LBS	HARDON PIPE 27.	105 27 185
1475 367 485	#4	
N E	and The	
ROCK DEB 350 LOS	SUS SOB UNDER BY	OCK 139 LBS
367485	/2/	
** Secure pipe to prevent pipes from rolling	Take Pictures	
#2 Rack B's Characteristics.	 #3	
BETOKE	/-TET	
1500205 Initial Wt.(lbs) Final Wt.(lbs)	Initial Wt.(lbs)	Final Wt.(lbs)
AFTER STEEL PIPE 240LBS	#6	
1498	TNT	
204 LBS 204 LBS	M/ 1/2 M/M/M/ CINDER BLO 626 LAS	KK 624 185
20,203	Take Pictures	
** SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cit	nder Blocks	
CP-Comtaminated Steel Piep, CC-Cont. Clay Pipe, CD-C		
Total Weight of the two racks must be less than 3,000 Lbs.		
Mark Locations of Thermocouples		
#7		Burner
ROXX	5	
Door Rack B	Rack A	:
		. See E
7		
Roll Calls and Close Furnace Door	Verify all site personnel are accou	
Holling on the	Have each person initial this chec	Kusi ai ieji.
1 Klotm & Klandows	Close and secure furnace door.	
Complete Spike Sample Weigh Sheet		
* SEE NEXT PAGE FOR AFTERBURNER and FURNACE STA	ART-UP SEQUENCE	

. •

	1-UP (3 OT 3)	Rmp-Up Time:	
Time:		Soak Temp:	
rTER	BURNER START-UP		Initial and record time for each item
\neg	Start "I.D. FAN". Adjust (ian speed to maintain a system draft <	,
=		/ER". Adjust fan speed to maintain <-0.	
╡). Adjust fan speed to maintain <-0.5 I	
_ 	<u> </u>		
		l, the control system will initiate a purge seque o light the burner at low fire.	ence.
, ا	•	-	
۲		shbuttons on the Computer.	
J	Warm-Up Burner up to 1	1800 Deg. F. Adjust fan speed to maint	tain <-0.5 In.WC
	@ 600 F: :Time		•
	@ 1200 F: :Time @ 1800F: :Time	- Gas jest and	
	s room	1000 1 and system draft (d) <-0.5 In W	С.
NA	ACE START-UP		Initial and record time for each item
	Set Bleed Air Damper to	75%	
	-	OWER" Position. Adjust ID fan speed to	maintain <-0.5 In.WC
ĺ		AL". Set controller output to 0.0	
ĺ	Turn Furnace Key to "BU	•	
ĺ	Verify "INTERLOCK OK" L		
' 			
		control system will initiate a purge sequence. o light the burner at low fire.	
ŀ	prine prior will then ullempt to	right the burner at tow fire.	
	Open Bleed Air Valve to	> 100%	
		o to Soak Temp. Maintain Ramp-Up Ra	
5		ratures during ramp-up hourly, on the c	
	Once the burner is operating	g at low fire, burner control will be released to	o the operator. The operator must adjust
	µD jan speea to maintain <-	0.5 In.WC, afterburner temp @, 1800 Deg F, a	and furnace temp @, SOAK temperature.
	Manually Log Operating	; Parameters.	
	Use the attached Log Sheet	to record all operating parameters at least ho	urly.
	SOAK TIMES and TEMPER	ATURES will vary from test to test.	·
	** USE NEXT PAGE(S) TO	LOG OPERATING PARAMETERS	
	DOWN		Initial and record time for each item
/	Turn Furnace Kev to "Bl(OWER" After lowering Furnace Temp to	
			200 Deg. 1.
	STOP "OXIDIZER" and "A		
_	STOP Computer Datalog	ger when all thermocouples indicate I	less than 150 Deg F.
	** FOLLOW THE FURNACE	E UNLOADING PROCEDURES IN APPEND	IX "R" OF HASP.

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HOURLY	DATA	OG (0	
Bete:	27	FEB	96	
Time:				

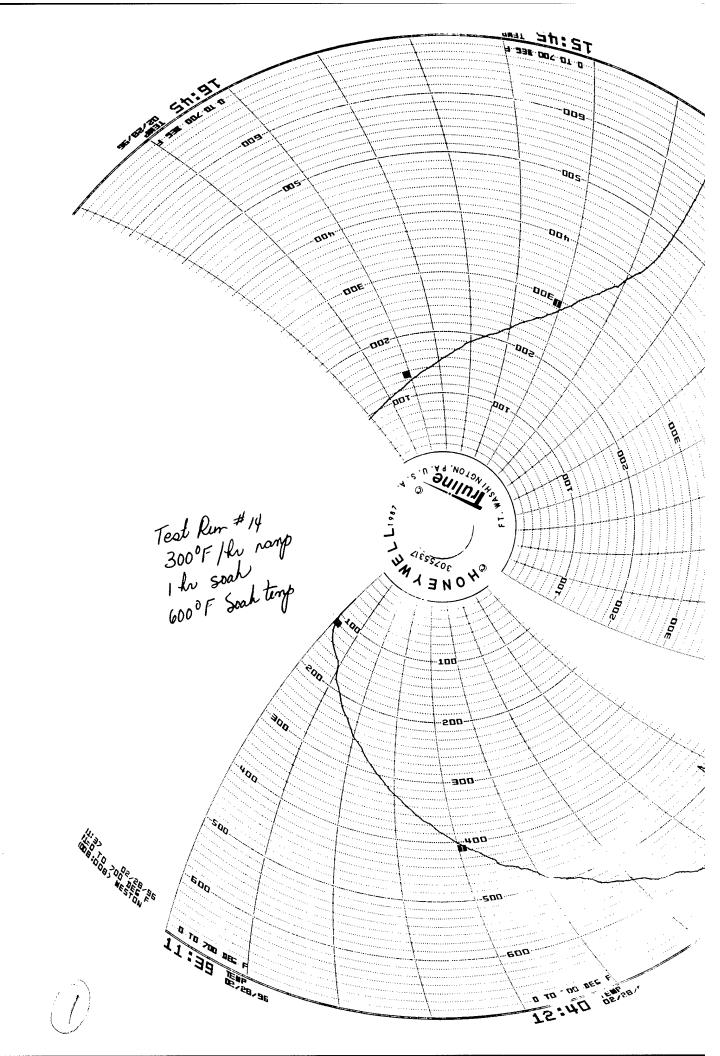
Test Member: # 14

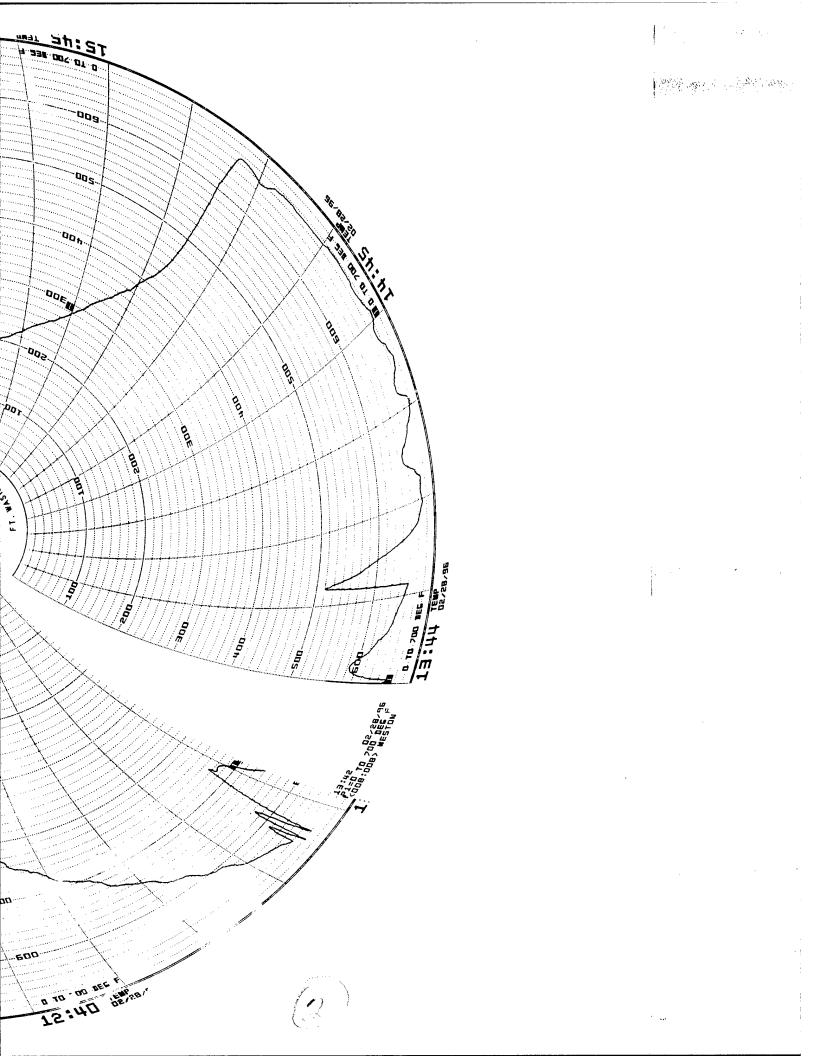
Remp Sp Rote: 300°F hr.

Soak Time: | hr.

Soak Tomp: 600°F

			1, 1/5	
Tag	Description	Unit	1200 1300 1406 1500	
FURNACE			Time:	
P1T-232	Fuel Gas Pressure	h.WC	9.40 11.12 11.73 11.42	
FIT-231	Fuel Gas Flow	CFH	54 123 160 128	
P1T-222	Combustion Air Prossure	h.WC	2335 23.59 23.89 23.99	
FIT-221	Combustion Air Flow	CFH	10563 10063 1001/10136	
P1T-158	Chember Pressure	h.WC	0.40 - 8.20 -0.29 -0.42	
TIT-201	Recorder Temperature	Deg.F	180 462 645 665	
T1T- 20 2	Furnece Exit Ges Temp (Control)	Deg.F	182 467 650 669	
TIT-203	Material Thormocouple #1	Deg.F	161 422 607 649	
TIT-204	Material Thormocouple #2	Dog.F	124 284 428 498	
TIT-205	Material Thermocouple #3	Dog.F	106 333 557629	
T1T-206	Material Thermocouple #4	Dog.F	151 383 531 579	
~1 7-20 7	Material Thermocouple #5	Dog.F	200 5/2 702 706	
AFTERBU	Meterial Thermocouple #5 # V9 TEMP TITION EXIT 945 RMER		151 389 547 610 160 383 551 592	
TIT-131	Combustor Burner Temp. Control	Dag. F	462 463 462 462	
FIT-149	Furnoe Flow	CFM	2274214622632103	
PIT-151	Fumos Prossuro (Furnaco Dreft)	hWC	0.44 0.30 0.37 0.29	
TIT-145	Combustor Temperature	Dag. F	1866 1795 1824 1834	
P1T-133	Fuel Procesure	PSIG	0.68 0.44 0.43 0.33	
TIT-121	Fuel Gas Flow	CFM	97/673 431557	
CEM				
NOx-8	Interconnecting Duct NOx	до т	-5.4-3.5 -3.4 -3.7	
THC-B	Interconnecting Duct THC	gom	39.9 18.9 16.7 17.4	
180-9	Hits Commercial part	,,		
Ç0	Stack's CO	ррт		
THC	Stack's THC	дот	10.7-0.7 0.7-0.7	
80 x	Stack's NOx	pp m	40.4 78.3 41.0 45.1	
S 02	Stack S02	ppm	2.07.07.0 2.0	
•	Stack's 02	*	11.3 91025 10.48 11.03	
CO2	Stack's CO2	%	5.9 6.2 6.42 6.16	
11T-300	Ambient Temp	Deg. F	60' 52 57	
Weather Service	Relative Humidity		63% 54 53	



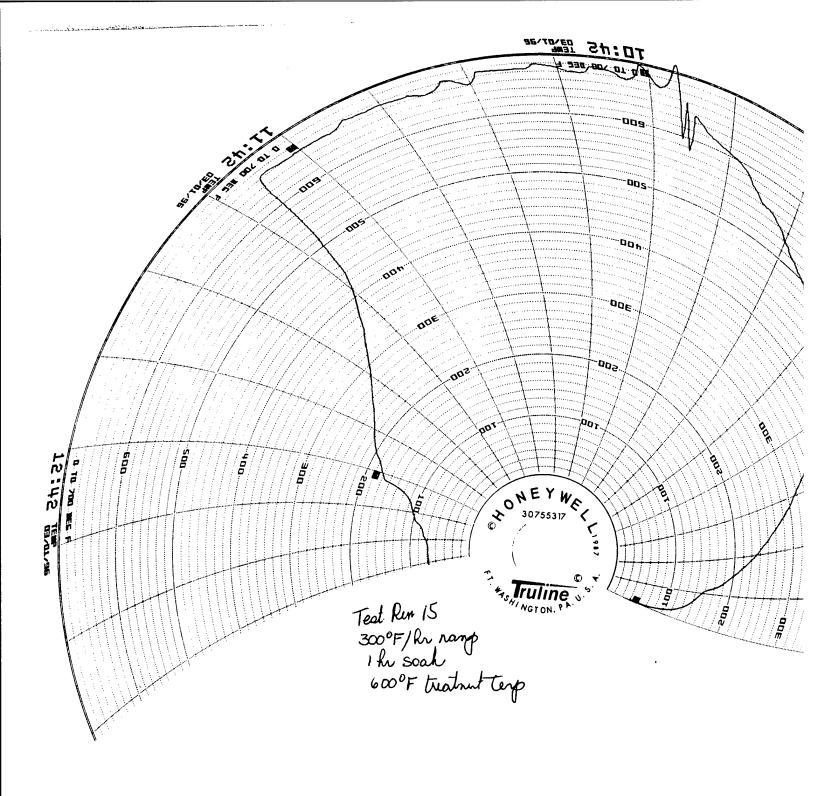


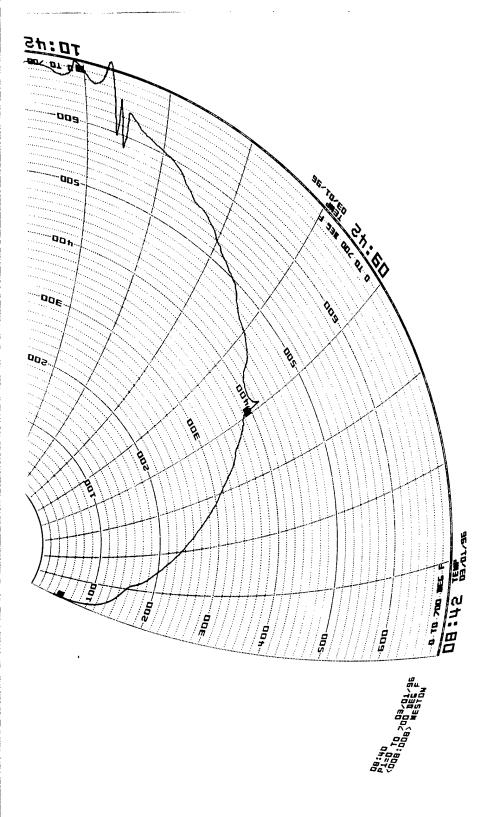
Pre - START-UP (1 of 3)	Test Number: #15
	Ramp-Up Rale: 300°F/RJ
Date: NARCH 96	Soak Time: IN
Time:	Soak Temp: 600 °F
MECHANICAL	
	Initial each item
Inspection doors/manways are SECURED	l'erify all valves, doors, inspection ports, manway, etc.
Gas Valves OPEN	have been returned to a possition capable of sustaining
View/Inspection Ports CLOSED	system operations.
Record Gas (Propane) Valve Position	70%
ELECTRICAL	Initial each item
All Lockout/Tagouts (1-5) are ACCOUNTED.	,, and each nem
Furnace and Afterburner Control Breakers are	- 01
Verity Emergency Pushbuttons are NOT ENGA	
BUMP Motors and switch to "AUTO"	NGED.
furnace Combustion Blower (M-220)	Taxi6: Gold value
Afterburner Combustion Blower (M-130)	Verify field selector switchess are in "Al TO" after
Afterburner I.D Fan (M-158)	all motors have been "BUMPED" to verify operations.
Place Afterburner Switch in REMOTE	
844 Calibrate CEM	Tank Recorded Adjustment (Y/N)
	Tank Recorded Adjustment (Y/N) Values Values
Interconnecting Duct - NOx	75.6. 27
Interconnecting Duct - THC	31.1 31 4
Stack NOx	
Stack SO2	75.6 75
Stack THC	126.4 126
Stack CO	124 1236
Slock OZ	5.97 5.9
Stack COg	4.89 4.9
** Verify that all regulators for Calibration Gas Tank	s are CLOSED
Datalogger/Computer is ON	
Record Time (Computer Clock)	
Record Ambient Temperature (TTT-300)	
Record Ambient Humidity (call Weather Service	664-3010 or 945-7000)
Pre - Spike Activities	
Lock-out all Motors: Complete Exclusion Log	
Secure Equipment Pad and Access Road w/ Chai	ins
Spike Test Materials and Furnace Test Plates	

	Test Number		
ADING/I)NLOADING (2 of 3)	Ramp-Up Rate:		
. .	Soak Time:		
Time:	Soak Temp:		
CLD ACTUATURE		in	itial each item.
ADING/UNLOADING (2 off 3) Dote: Dote: Sook Time: Sook Time:			
Load Furnace with Materials and Intermocou	- 11		
#/ Rock A's Characteristics	, i	* *	
600185	"		
(=:A:=(\AA \B=c)	/ /	Initial Wt.(lbs)	Final Wt.(lbs)
363 LBS 360 LBS	- 34		
1416 LBS	VIII ICO PIONO		
ROCK DEB ROCK DEB	38000 DO 800	CINDER BLOCK	CINDER BLOCK
367LBS 354 LBS	Toka Pictures	170 285	164 235
	10KC 1 (2.070)		-
Rack B's Characteristics. 430 LBS	——#3		
START /	TWT TWT	Initial Wt.(Ibs)	Final Wt.(lbs)
/ /		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
1495 IBS 340 LBS 240 LBS			
	POLY	<i>Rox</i>	
CLAY PIPE (LAY PIPE	characted de de la Verde	-CINDIER BLOCK	CINDERBLOCK
804 LBS 2.04 LBS		626 LBS	621 LBS
•	idke rictures		
Total Weight of the πwo racks must be less the	3n 3,000 LBs.		
Mark Locations of Thermiocouples			
			7
#7			Aurner
	j !		
	B	ack A	
	j (
		2000 2000	
Roll Calls and Close Furmage Door	l'erifi all site per	rsonnel are accounted	l for.
- Kevin 2- Winelling	Have each person	n initial this checklist	
Aluff	Cluse and secure	furnace door.	
11.6			
Complete Spike Sample Weigh Sheet			
Load Furnace with Materials and Thermocouples For each rack him, provide a description in lerms of contents, appearance, moisture, etc.			
was tight triam to the fall fall fall fall fall fall fall fal			

Date.		
Time		Soak Time: Soak Temp:
		Total Temp.
انہ ،	RBURNER START-UP	Initial and record time for each item
	Start "I.D. FAN". Adjust fa	in speed to maintain a system draft < -0.5 in. WC
ĪĎ		R". Adjust fan speed to maintain <-0.5 In.WC
70		Adjust fan speed to maintain <-0.5 In.WC
		the control system will initiate a purge sequence.
	The pilot will then attempt to	
10	Start "DATALOGGER" Puish	abuttons on the Computer.
A		00 Deg. F. Adjust fan speed to maintain <-0.5 In.WC
,	€ 600 F: :Times	Once the burner is at low fire, burner control will be released to the operator.
	& 1200 F. :Time:	The operator must adjust gas flow and ID fan speed to maintain temperature
	4: 1800F: :Time:	1800°F and system draft 'a; <-0.5 In 11°C.
JRN.	ACE START-UP	Initial and record time for each item
A	Set Bleed Air Damper to 7	
~	•	. 676
<i>[P</i>]	Turn Furnace Key to "BLO"	WER" Position. Adjust ID fan speed to maintain C.O.E. in WC
		WER" Position. Adjust ID fan speed to maintain <-0.5 in.WC
	Set Controller to "MANUA	L". Set controller output to 0.0
		L". Set controller output to 0.0 NER" Position.
	Set Controller to "MANUA Turn Furnace Key to "BUR! Verify "INTERLOCK OK" Lig	L". Set controller output to 0.0 NER" Position. Int is energized.
	Set Controller to "MANUA Turn Furnace Key to "BUR Verity "INTERLOCK OK" Lig Once the burner started, the c	NER" Position. The is energized. Ontrol system will, initiate a purge sequence.
	Set Controller to "MANUA Turn Furnace Key to "BUR Verity "INTERLOCK OK" Lig Once the burner started, the control will then attempt to it.	NER" Position. The is energized. The interior of the control of
	Set Controller to "MANUA Turn Furnace Key to "BUR Verity "INTERLOCK OK" Lig Once the burner started, the control will then attempt to the Open Bleed Air Valve to	NER" Position. That is energized. The control system will, initiate a purge sequence. The burner at low fire.
	Set Controller to "MANUA Turn Furnace Key to "BUR Verity "INTERLOCK OK" Lig Once the burner started, the control will then attempt to a Open Bleed Air Valve to Ramp-Up Furnace Temps	NER" Position. The is energized. The is energized. The initiate a purge sequence. The initiate a purge sequence. The initiate of purge sequence.
	Set Controller to "MANUA Turn Furnace Key to "BUR! Verity "INTERLOCK OK" Lig Once the burner started, the control will then attempt to a Company of the pilot will then attempt to the Ramp-Up Furnace Temps Record Furnace temperature.	NER" Position. The is energized. The is energized. The initiate a purge sequence. The initiate of purge sequence. The initiate
B	Set Controller to "MANUA Turn Furnace Key to "BUR! Verity "INTERLOCK OK" Lig Once the burner started, the control will then attempt to a Ramp-Up Furnace Temporal Record Furnace temperations of the burner is operating to	NER" Position. That is energized. The initiate a purge sequence. The burner at low fire. The Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. The stures during ramp-up hourly, on the control room log sheet. The operator must educate the
B	Set Controller to "MANUA Turn Furnace Key to "BUR! Verity "INTERLOCK OK" Lig Once the burner started, the control will then attempt to a Ramp-Up Furnace Temp to Record Furnace temperating a Once the burner is operating a 1D fan speed to maintain <-0.	NER" Position. In the is energized. In the burner at low fire. It is some some some sequence. It is some some some some some some some som
B	Set Controller to "MANUA Turn Furnace Key to "BUR! Verity "INTERLOCK OK" Lig Once the burner started, the control will then attempt to a light of the pilot will then attempt to a light of the pilot will then attempt to a light of the pilot will then attempt to a light of the pilot will then attempt to a light of the pilot will then attempt to a light of the pilot will then attempt to a light of the pilot will then attempt to a light of the pilot will then attempt to a light of the pilot will then attempt to a light of the pilot will then attempt to a light of the pilot will then attempt to a light of the pilot will be	NER" Position. That is energized. The burner at low fire. The Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. The burner at low fire on the control room log sheet. The low fire, burner control will be released to the operator. The operator must adjust in low fire, afterburner temp a, 1800 Deg F, and furnace temp a, SOAK temperature.
B B	Set Controller to "MANUA Turn Furnace Key to "BUR! Verity "INTERLOCK OK" Lig Once the burner started, the control will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will be a compart	NER" Position. In the is energized. In the burner at low fire. It is some system will, initiate a purge sequence. It is the burner at low fire. It is some system will, initiate a purge sequence. It is some system will initiate a purge system system will initiate a purge s
B B	Set Controller to "MANUA Turn Furnace Key to "BUR! Verity "INTERLOCK OK" Lig Once the burner started, the control will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will be com	NER" Position. The is energized. In the burner at low fire. It is sometimed to purple sequence. It is sometimed to burner at low fire. It is sometimed to burner at low fire. It is sometimed to burner to burner control will be released to the operator. The operator must adjust to low fire, burner control will be released to the operator. The operator must adjust to low fire, burner temp a. 1800 Deg F. and furnace temp a. SOAK temperature. Parameters. Parameters. TURES will vary from test to test.
	Set Controller to "MANUA Turn Furnace Key to "BUR! Verity "INTERLOCK OK" Lig Once the burner started, the control will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will then attempt to a compart of the pilot will be com	NER" Position. In this energized. In this energized. In the burner at low fire. In Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. It is during ramp-up hourly, on the control room log sheet. In the burner control will be released to the operator. The operator must adjust to the Int. In the Control room log sheet. In the burner temp a 1800 Deg F, and furnace temp a, SOAK temperature. Parameters. Parameters. Parameters will vary from test to test. OG OPERATING PARAMETERS
	Set Controller to "MANUA Turn Furnace Key to "BUR! Verity "INTERLOCK OK" Lig Once the burner started, the control will then attempt to a the pilot will then attempt	NER" Position. Ith is energized. Interpretation on the control system will, initiate a purge sequence. Itight the burner at low fire. Ito Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Itures during ramp-up hourly, on the control room log sheet. It low fire, burner control will be released to the operator. The operator must adjust in the control will be released to the operator. The operator must adjust in the control will be released to the operator. The operator must adjust in the control will be released to the operator. The operator must adjust in the control will be released to the operator. The operator must adjust in the control will be released to the operator. In the control will be released to the operator. The operator must adjust in the control will be released to the operator. Parameters. Parameters. Parameters will vary from test to test. OG OPERATING PARAMETERS Initial and record time for each item
	Set Controller to "MANUA Turn Furnace Key to "BUR! Verity "INTERLOCK OK" Lig Once the burner started, the control will then attempt to a temporal to will then attempt to a temporal to be a second Furnace Temporal Tempor	NER" Position. Ight is energized. Ontrol system will initiate a purge sequence. Initial the burner at low fire. 100% To Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Itures during ramp-up hourly, on the control room log sheet. In low fire, burner control will be released to the operator. The operator must adjust in low fire, afterburner temp a. 1800 Deg F, and furnace temp a, SOAK temperature. Parameters. Parameters. Parameters at least hourly. TURES will vary from test to test. OG OPERATING PARAMETERS Initial and record time for each item. WER" After lowering Furnace Temp to 200 Deg. F.
	Set Controller to "MANUA Turn Furnace Key to "BUR! Verity "INTERLOCK OK" Lig Once the burner started, the control will then attempt to a temporal to the pilot will then attempt to a temporal to pen Bleed Air Valve to the Ramp-Up Furnace Temporal Record Furnace temporal Once the burner is operating to 10 fan speed to maintain <-0 Manually Log Operating I Case the attached Log Sheet to SOAK TIMES and TEMPERATION OWN Turn Furnace Key to "BLOW STOP "OXIDIZER" and "All R	NER" Position. In this energized. In the burner at low fire. In Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. It was during ramp-up hourly, on the control room log sheet. In low fire, burner control will be released to the operator. The operator must adjust to low fire, burner temp a. 1800 Deg F, and furnace temp a. SOAK temperature. Parameters. Parameters. In the operator parameters at least hourly. TURES will vary from test to test. OG OPERATING PARAMETERS Initial and record time for each item. WER" After lowering Furnace Temp to 200 Deg. F. BLOWER"
	Set Controller to "MANUA Turn Furnace Key to "BUR! Verity "INTERLOCK OK" Lig Once the burner started, the control will then attempt to a temporal to the pilot will then attempt to a temporal to pen Bleed Air Valve to the Ramp-Up Furnace Temporal Record Furnace temporal Once the burner is operating to 10 fan speed to maintain <-0 Manually Log Operating I Case the attached Log Sheet to SOAK TIMES and TEMPERATION OWN Turn Furnace Key to "BLOW STOP "OXIDIZER" and "All R	NER" Position. Ight is energized. Ontrol system will initiate a purge sequence. Initial the burner at low fire. 100% To Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Itures during ramp-up hourly, on the control room log sheet. In low fire, burner control will be released to the operator. The operator must adjust in low fire, afterburner temp a. 1800 Deg F, and furnace temp a, SOAK temperature. Parameters. Parameters. Parameters at least hourly. TURES will vary from test to test. OG OPERATING PARAMETERS Initial and record time for each item. WER" After lowering Furnace Temp to 200 Deg. F.

UNIDI	V DBTALOG OF						ī. Re	set Humbor: mp-Up Rate: Soak Time: Soak Tomp:	_ ≠ 1	15 p	<u></u>				
Bets:	MARCH 196							Soak Time:	The	• •		 			
Time:	MARCH 196							Soak Temp:	600	DOF		 			
<i></i>								· · · · · · · · · · · · · · · · · · ·				 			
Tag	Description	Unit	0900	1000	11:00	1200									
			Time:			I					_	 			
FURNACE						,			·			 	 	<u>-</u>	
P1T-232	Fuel Gas Prossure	h.WC			12.40										
FIT-231	Fuel Gas Flow	CFH			168			_							
P1T-222	Combustion Air Prossure	h.WC	24.58	24.91	24.92	1840							 		
FIT-221	Combustion Air Flow	CFH			1015										
P1T-158	Chamber Pressure	M.WC				-0,43									
TIT-201	Recerder Temperature	Dag.F		-	679										
TIT- 20 2	Furnece Exit Gas Temp (Centrel)	Dog.F			686			-				 			
TIT-203	Meterial Thermocouple # 1	Dag.F	-		644	+						:	 		
TIT-204	Meterial Thermocouple #2	Deg.F			539							 	 		_
111- 20 5	Material Thermocouple #3	Deg.F			529			-				 			
TIT-206	Material Thermocouple #4	Deg.F	137	36/	581	333							 		-
T-207	Material Thermocouple #5 AUS. TEMP- THE IDO EXIT 9 AS TEMP	Dag.F	183 154 157	363	601	373						 	 		L
AFTERBU	ANER EXIT 9AS TEMP).	157	359	<i>5</i> 73	303									
T1T-131	Combuster Burner Temp. Control	Dag. F	1837	1823	j839	1803									L
FIT-149	Furnes Flow	CFM	F	1	1	3560						 :			L
P1T-151	Fumos Prossure (Furnace Draft)	MYC	0.33	0.32	0.34	1.21							 		_
TIT-145	Combustor Temperature	Dag. F	0.33 1837	1857	1839	1190									_
PIT-133	Fuel Process	PSI G			035							 			_
T1T-121	Fuel Gas Flow	CFM	859	744	580	1094			<u> </u>	<u> </u>					
CEM															
02,00			. 4	12	3.4	[,,]					·				
NOx-B	Interconnecting Duct NOx	ppm		 		1									\vdash
THC-B	Interconnecting Duct THC	ppm		,	28.2		l			L		l	l		_
CO	Stact's CO	ppm			0.0										-
THC	Staci's THC	ppm		1	-0.2										-
NOx	Stacir's NOx	pp m		I	47.3				-						-
\$02	Stack 802	ppm .			2.0				 					<u> </u>	
į	Steck's 02	*	i	í	i	12,20			-						-
CO2	Stack's CO2	*	6,34	630	632	4.42			<u> </u>	<u> </u>	<u> </u>			<u> </u>	<u>_</u>
TIT-300	Ambient Temp	Deg. F	42	44	45	46.6									<u>_</u>
Weather Service	Relative Humidity			54		42.2									





Pre -	START-UP (1 of 3)		Test Number		
	Date: 6 March 96	•	Ramp-Up Rale: Soak Time:	300°/HR	
	Time:		Soak Temp:	None 600°	
MECI	HANICAL			Initial e	ach ife
TH	Inspection doors/manways are SECURED	l'erify all	valves, doors,	inspection ports, manway;	eic
Œ	Gas Valves OPEN	H		position capable of sustain	
THE	View/Inspection Ports CLOSED	system op	erations.	•	
到	Record Gas (Propane) Valve Position	68	,5%	(12,330 gal)	
ELEC	TRICAL			Initial e	ach ite
田	All Lockout/Tagouts (1-5) are ACCOUNTED.				
H	Furnace and Afterburner Control Breakers are Of	ì.			
Ħ	Verity Emergency Pushbuttons are NOT ENGAGE)			
H	BUMP Motors and switch to "AUTO"				
	Furnace Combustion Blower (M-220)	l'erifi siel	d selector swite	chess are in "AUTO" after	
	Afterburner Combustion Blower (M-130)			MIPED" to verify operation	ins.
	Afterburner I.D Fan (M-158)			•	
	Place Afterburner Switch in REMOTE				
TI.	Calibrate CEM	Tank	Recorded	Adjustment (Y/N)	
<i></i>		Values	Values		
	Interconnecting Duct - NOx	75.6	75	У	
	Interconnecting Duct - THC	31.]	31	<u> </u>	
	- SHOCK NO DUCT NO	75.6	75	Y	
	✓ Stack SO2	1264	126	N	
	Stack THC	31.1	31	У	
	✓ Stack CO	124.0	124,0	у У	
		124.0 5.97	124,0 6.0	У У У	
	Stack CO Stack OZ Stack COZ	124.0 5.97 4.89	124,0	У У У У	
Œ	Stack CO Stack OZ	124.0 5.97 4.89	124,0 6.0	У У У У	
#	Stack CO Stock O2 Stock CO2 Verify that all regulators for Calibration Gas Tanks are	124.0 5.97 4.89	124,0 6.0	У У У У	
H	Stack CO Stock OZ Stock COZ ** Verify that all regulators for Calibration Gas Tanks are Datalogger/Computer is ON	124.0 5.97 4.89	124,0 6.0	У У У У	
#	Stock CO Stock O2 Stock CO2 ** Yerify that all regulators for Calibration Gas Tanks are Datalogger/Computer is ON Record Time (Computer Clock)	124.0 5.97 4.89 CLOSED	124,0 6.0 4.9	У У У У	
	Stack CO Stack CO Stack CO2 ** Terify that all regulators for Calibration Gas Tanks are Datalogger/Computer is ON Record Time (Computer Clock) Record Ambient Temperature (TIT-300) Record Ambient Humidity (call Weather Service 664-57) Pte - Spike Activities	124.0 5.97 4.89 CLOSED	124,0 6.0 4.9	У У У У	
	Stack CO Stack CO Stack COZ ** Verify that all regulators for Calibration Gas Tanks are Datalogger/Computer is ON Record Time (Computer Clock) Record Ambient Temperature (TIT-300) Record Ambient Humidity (call Weather Service 664-3) Pre - Spike Activities Lock-out all Motors: Complete Exclusion Log	124.0 5.97 4.89 CLOSED	124,0 6.0 4.9	У У У У	
	Stack CO Stack CO Stack CO2 ** Terify that all regulators for Calibration Gas Tanks are Datalogger/Computer is ON Record Time (Computer Clock) Record Ambient Temperature (TIT-300) Record Ambient Humidity (call Weather Service 664-57) Pte - Spike Activities	124.0 5.97 4.89 CLOSED	124,0 6.0 4.9	У У У У	

• . •

DING/UNLOADING (2 oif 3) Date: 6 March 96 Time:	Test Number Ramp-Up Rate: Soak Time: Soak Tamp:	16/ 300°/1 None 600°	
D ACTIVITIES ALL SPIKES TAT			Initial each item.
Load Furnace with Materiials and Thermocoup	For each rack hi	n, provide a descrip	tion in
	terms of contents	s, appearance, moist	ure, elc.
Rock A's Characteristics	~ Refe r to loading	procedures for instru	ections.
500 BEFORE Initial Wt.(lbs) Final Wt.(lbs) FITER 1460 LBS 1417 CINDER BLOCK	Materials #5	Initial Wt.(lbs)	Final Wt.(lbs)
417 CINDER BLOCKS	X.x #4		·
** Secure pipe to prevent pipes from rolling	Take Pictures		
Rack B's Characteristics. 430 LBS Initial Wt. (lbs) STEEL PIPE 240 LBS 240 LBS	Materials #6	Initial Wt.(lbs)	Final Wt.(lbs)
CLAY PIPE 204 LBS	Take Pictures	CINDEL BIOCH	633 185
SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-CP-Comtaminated Steel Piep, CC-Cont. Clay I Tolal Weight of the tiwo racks must be less than	Pipe, CD-Cont. Debris		-
Mark Locations of Thermocouples			
#7 X			Burner
Door Rack B		Rack A	151 151
Roll Calls and Close Furmace Door Then Then Thenon Tun Amel	n n	ersonnel are accoun on initial this checkl re furnace door.	
Complete Spiké Sample Weigh Sheet			
** SEE NEXT PAGE FOR AFTERBURNER and FURI	NACE START-UP SEQUENCE	•	

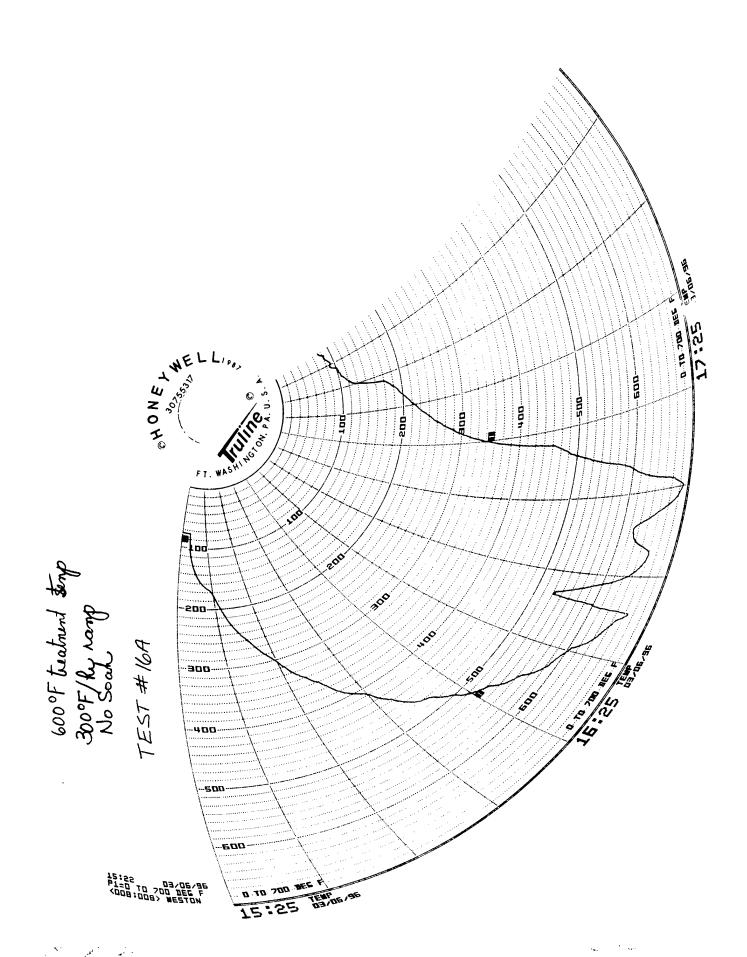
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	RT-UP (3 of 3) :: 6 March 96 ::	Test #1 Rmp-Up Time: Rate Soak Time: Soak Temp:	16A 300°/HR None 600
THE THE	Start "Pre-Mix AIR BLOWER" Start "OXIDIZER" (Burner).	speed to maintain a system dra . Adjust fan speed to maintain < Adjust fan speed to maintain <-0 e control system will initiate a purge so ght the burner at low fire.	-0.5 In.WC .5 In.WC
	Start "DATALOGGER" Pushb Warm-Up Burner up to 1800	Deg. F. Adjust fan speed to me	
	6 600 F: :Time 6 1200 F: :Time 6 1800F: :Time	11	er control will be released to the operator. nd ID fan speed to maintain temperature n WC.
FURN HARAITA		ER" Position. Adjust ID fan speed ' . Set controller output to 0.0 ER" Position.	Initial and record time for each item. to maintain <-0.5 In.WC
מ <i>בא</i> ו	The pilot will then attempt to lig		nce.
		Soak Temp. Maintain Ramp-Up ores during ramp-up hourly, on th	
		In.WC, afterburner temp @, 1800 Deg	ed to the operator. The operator must adjust F , and furnace temp (a) SOAK temperature.
•	SOAK TIMES and TEMPERAT		t hourly.
COOL	-DOWN	G OPERATING PARAMETERS	Initial and record time for each item.
417		ER" After lowering Furnace Temp	o to 200 Deg. F.
	STOP "OXIDIZER" and "AIR B		4. (4) 150 D
1 47		r when all thermocouples indica NLOADING PROCEDURES IN APPE	_

. .

HOURI							Ramp	lp Rote:	300°/HR									
Date:	6 March 96	-							ek Time:		lon.	<u>e</u>						
Time:		_						Sac	k Temp: _		2Oc							
													·				 	=
Tag	Description	Unit	1/00	1700														Ī
	Description][Time:	1700	1		1						<u> </u>					L
FURNACE			(and .														 	
P1T-232	Fuel Gae Pressure	h.WC	10,09	11,29						_								L
FIT-231	Fuel Gae Flow	CFH	98	196														L
P1T- 22 2	Combestion Air Processe	M.WC	22,9	2320														
FIT-221	Combustion Air Flow	CPI	9798	9600														-
PIT-158	Chamber Processes	h.WC	-,23	-,21														L
TIT-201	Recorder Temperature	Day.F	302	657														
TIT- 20 2	Furnece Exit Gas Temp (Control) Measured in Exit Duct	Dog.F	222	520														L
TIT-203	Metarial Thermocouple #1	Dog.F	270	693													 	L
TIT- 204	Meterial Thermocouple #2	Dog.F	172	363														
TIT-205	Material Thermocouple #3	Deg.F	218	527													 	L
TIT-206	Material Thermocouple #4	Dog.F	248	677														
¬1.207	Material Thermocouple #5		3/2	732														Ĺ
	material Temp Avg.	Deg F.	254	602									<u> </u>				 	
AFTERBU	MMER				<u>-</u>								T	T	I			Г
TIT-131	Combustor Burner Temp. Control	Dog. F	1850	1848														ļ
FIT-149	Furnes Flow PP	Herm	2338	2225														-
PIT-151	Fumos Procesuro (Furnaco Draft)	MWC	.40	,29							· · · · ·			ļ				
TIT-145	Combuster Temperature	Deg. F	1857	1850														-
PIT-133	Fuel Pressure	PSIG	.62	,39													 	-
TIT-121	Fuel Gae Flow	CFM		638													 	
TIT-100	ID Fan Inlet Gas Temp.	Deg F.	204	493													 	
CEM				1		Т	Т		 1				1	1	ľ		l	Τ
80x-8	Interconnecting Duct NOx	ррт		14.7														ł
THC-B	Interconnecting Duct THC	ppm	39,3	233									<u> </u>					<u> </u>
CO	Stack's CO	ppm	,5	,5														ļ
THC .	Stack's THC	до т	1	-,2														
100- NO	SULLET DUCT NO	ppm		16.2														
S02	Stack \$02	др т		3.0														1
,	Stack's 02	*	10.18	1														
CO2	Stack's CO2	*		696														
			76															Ī
TIT-300	Ambient Temp	Deg. F B	15	1														+
Serv	Relative Humidity	10	7~	10			1						1	L		L	L	1

Test Number: 16A



Pre -	START-UP (1 of 3)	Test Number: 168								
116			Ramp-Up Rate:	300°F/h						
	Date: 6-MAR 96		Soak Time:	_ O ho						
	Time:		Soak Temp:	600°F						
MECI	HANICAL			Initial each it						
94	Inspection doors/manways are SECURED	J								
26	Gas Valves OPEN	Ã		inspection ports, manway, etc.						
		have bee	n returned to a	position capable of sustaining						
	View/Inspection Ports CLOSED	system o	perations.							
	Record Gas (Propane) Valve Position									
ELEC	TRICAL			Initial each is						
00	All Lockout/Tagouts (1-5) are ACCOUNTED.									
14	Furnace and Afterburner Control Breakers are O	N								
1H	Verity Emergency Pushbuttons are NOT ENGAGE									
00	BUMP Motors and switch to "AUTO"	ט.								
74	Furnace Combustion Blower (M-220)	L'ami 6: Ga	ld ralactus = vit	chess are in "AUTO" after						
	Afterburner Combustion Blower (M-130)									
	Afterburner I.D Fan. (M-158)	Han motor	nuve been B	MIPED" to verify operations.						
	Place Afterburner Switch in REMOTE									
24	Calibrate CEM	Tank	Recorded	Adjustment (Y/N)						
—	DONE PM	Values	Values	well amen (1/4)						
	Interconnecting Duct - NOx		·							
	Interconnecting Duct - THC		- 							
	Stack NOx									
	Stack SO2									
	Stack THC	<u> </u>)						
-	Stack CO									
	Slock O2									
•	Stack CO	•								
	** Verify that all regulators for Calibration Gas Tanks are	· CLOSED								
20	Datalogger/Computer is ON									
	Record Time (Computer Clock)									
	Record Ambient Temperature (TIT-300)									
	Record Ambient Humidity call Weather Service 664-	3010 or 945-70	900)							
22	Pre - Spike Activities									
	CLock-out all Motors: Complete Exclusion Log									
•	Secure Equipment Pad and Access Road w/ Chains									
•	Spike Test Materials and Furnace Test Plates									
-	Property and founder less Figles									

Ding/UNLOADING (2 off 3) Date:	Ramp-Up Rate: Soak Time: Soak Temp:	
ACTIVITIES ALL Spiles TET		Initial each item.
Load Furnace with Materials and Thermocouples	For each rack hin, provide	
4.9/	terms of contents, appearar	
Rack A's Characteristicss. 600 155	** Refer to loading procedure	is for instructions.
SEFORE 1500 Initial Wt.(lbs) Final Wt.(lbs) 9FTER 1317 16-5	Materials Initial Wt	.(lbs) Final Wt.(lbs)
1987	J I J I I I I I I I I I I I I I I I I I	
** Secure pipe to prievent pipes from rolling	Take Pictures	
#2 Rack B's Characteristics.		
BEFORE 1500 Initial WI. (los) First WITHOST AFTER Steel 240 lbes 0 Clay 204 lbes	Materials Initial William Company Comp	(lbs) Final Wt.(lbs)
633 153	Take Pictures	
** SP-Spiked Steel Piper, SC-Spiked Clay Pipe, SD-Spik CP-Comtaminated Steel Piep, CC-Cont. Clay Pipe, Total Weight of the thwo racks must be less than 3,00	CD-Conf. Debris	
Mark Locations of Thermocouples		
#7		Burner
Door Rack B	Rack A	
Roll Calls and Close Furmace Door	l'erify all site personnel ai Have each person initial ti	his checklist at left.
Ton Bur	Clase and secure furnace	door.
Complete Spike Sample Weigh Sheet ** SEE NEXT PAGE FOR ALFTERBURNER and FURNACE	CE START-UP SEQUENCE	

STAR Date: Time:		Rmp-Up Time: Soak Time: Soak Temp:
· JA	RBURNER START-UP	Initial and record time for each item from speed to maintain a system draft < -0.5 In. WC
GE GE	Start "Pre-Mix AIR BLOW	VER". Adjust fan speed to maintain <-0.5 In.WC r). Adjust fan speed to maintain <-0.5 In.WC
		d, the control system will initiate a purge sequence. to light the burner at low fire.
QB QB		shbuttons on the Computer. 1800 Deg. F. Adjust tan speed to maintain <-0.5 ln.WC
	ē 600 F: :Times ē 1200 F. :Times is 1800F: :Times	The operator must adjust gas flow and 1D fan speed to maintain temperature
URNA B B B B		OWER" Position. Adjust ID fan speed to maintain <-0.5 In.WC JAL". Set controller output to 0.0 JRNER" Position.
	Once the burner started, the The pilot will then attempt to Open Bleed Air Valve to Ramp-Up Futnace Temp	e control system will initiate a purge sequence. to light the burner at low fire.
	Once the burner is operating	g at low fire, burner control will be released to the operator. The operator must adjust 0.5 In N.C. afterburner temp a, 1800 Deg F, and furnace temp a; SOAK temperature.
	SOAK TIMES and TEMPER	to record all operating parameters at least hourly. 24TURES will vary from test to test. 4COG OPERATING PARAMETERS
	DOWN	Initial and record time for each item
_	Turn Furnace Key to "BLG STOP "OXIDIZER" and "A	OWER" After lowering Furnace Temp to 200 Deg. F. IR BLOWER"
		gger when all thermocouples indicate less than 150 Deg F.
	OLLOW THE FURNACE	E UNLOADING PROCEDURES IN APPENDIX "R" OF HASP.

HOURL		ALOX		of)
Bate:	6	MAR.	<u> 4</u> 4	2
7 		•		

Test Number: 16 B.
Ramp-Up Rate: 300 9 hv

Seak Time: 0

Seak Tamp: 600 °F

							r										
Tag	Description	Unit	2360	00													
FURNACE			Time:														
P1T-292	Fuel Gae Prossure	h.WC	10.34	11.50													
FIT-231	Fuel Gas Flow	CFH	1	190													
PIT-222	Combustion Air Procesure	h.WC	13.44														
FIT-221	Combustion Air Flow	CFH	9913	9681													
P1T-158	Chamber Pressure	h.WC	-0.16	- 14													
TIT-201	Recorder Temperature	Dag.F	230	65													
TIT-202	Furnace Exit Gas Temp (Control)	Dag.F	231.	503													
TIT-203	Material Thermocouple #1	Deg.F	275	509													<u></u>
TIT-204	Material Thermocouple #2	Dag.F	205														_
TIT- 20 5	Material Thermocouple #3	Deg.F	271														_
TIT-208	Material Thermocouple #4	Dog.F	286														
91-207	Material Thermocouple #5	Dog.F	3/3														
AFTERBU	AUG. TEMP ANER TIT 20) EXIT PAS		327	385													
TIT 10	O INLET 945		1823	1907		T											
TIT-131	Combustor Burner Temp. Control	Dog. F	2143			ļ											
FIT-148	Fumos Flow	CFM	033							-							
PIT-151	Fumes Pressure (Furnace Draft)	hWC .	1831														
TIT-145	Combustor Temperature	Deg. F PSIG	0.52														
PIT-133	Fuel Pressure	CFM	8/0			1											
TIT-121	Fuel Gas Flow	ыш	[37]	70		٠	l	1	l		L		L				
CEM				· .1			1	I	Ī				Į	1	ı	r	Τ
NOx-B	Interconnecting Duct NOx	ррт		0,6		-						.,					
THC-B	Interconnecting Duct THC	ppm	38.1	28													<u> </u>
CO	Stack's CO	ppm	0.5	1.0													
THC .	Stack's THC	ррт	-0.8	0.1													
NOx	Stack's NOx	ррт		>><													
S02	Stack SO2	ppm	1.5	1,5													
?	Stack's 02	*	10.77	14.15													
C02	Stack's CO2	%	5.84	4.98									<u> </u>	<u></u>			
TIT-300	Ambient Temp	Deg. F	64	54													
Weather	Relative Humidity		0.0	100													
Service	reserved frementy					٠	1		L		1		l	·			

Same of the same o

Control of the Contro

Test 16 b

Test 16 b

300 F/hu

0 hu soul Temp

600 F Soul Temp

TO THE REAL PROPERTY.

Pre -	START-UP (1 of 3)		Test Number:	- 10	ROX
	Date: 7 MARCH 96	_	Ramp-Up Rate: Soak Time:	300°F/#\ 0	
	Time:		Soak Temp:	600 ° p	
MECH	IANICAL				Initial each item.
	Inspection doors/manways are SECURED	l'erify all	valves, doors, i	inspection ports,	manway, etc.
	Gas Valves OPEN	have been	returned to a j	position capable	of sustaining
	View/Inspection Ports CLOSED	system op	erations.		
6790	Record Gas (Propane) Valve Position	68.4	5%		
ELEC'	TRICAL				Initial each item.
	All Lockout/Tagouts (1-5) are ACCOUNTED.				
THE STATE OF THE S	Furnace and Afterburner Control Breakers are ON.				
44	Verify Emergency Pushbuttons are NOT ENGAGED	•			
H	BUMP Motors and switch to "AUTO"				
7	Furnace Combustion Blower (M-220)	l'erify field	d selector switc	ches are in "AUT	O" after
	Afterburner Combustion Blower (M-130)	all motors	have been "BU	MPED" to verif	v operations.
	Afterburner I.D Fan (M-158) Place Afterburner Switch in REMOTE				
	Calibrate CEM	Tank Values	Recorded Values	Adjustment (Y/N)
_	Interconnecting Duct - NOx		· · · · · · · · · · · · · · · · · · ·		
	✓ Interconnecting Duct - THC	75.6 31.1	: <i>75</i> : 31	<u>у</u> У	
	Stock NOx Duct NO	75.6	75		
	Stack SO2	126,4	126	Y	
,	Stack THC	31.1	31	Y	
	Stack CO Stack O2	124.0	124		
	∠ Stack COZ	5.97 4.89	4.9		
	** Verify that all regulators for Calibration Gas Tanks are				·
(FF)	Datalogger/Computer is ON				
7	Record Time (Computer Clock)				
	Record Ambient Temperature (TIT-300)				
	Record Ambient Humidity (call Weather Service 664-36	010 or 945-70	00)		
2127	Pre - Spike Activities				
	Lock-out all Motors; Complete Exclusion Log				
	Secure Equipment Pad and Access Road w/ Chains				
	Spike Test Materials and Furnace Test Plates				

Date: Time: IELD ACTIVITIES Load Furnace with Materials and Thermocouples	Ramp-Up Rate: Soak Time: Soak Temp:		
Time:			
ELD ACTIVITIES	Soak Temp:		
			Initial each item
Load Furnace with Materials and Thermocouples			
	11	n, provide a descrip , appearance, moist	
#/ Rack A's Characteristics.	11 '	procedures for Instru	
#/ Rack A's Characteristics. 5TART 600 LB	# Keler lo loddiilig	procedures for mone	
3////	HMOI driedles	Initial Wt.(lbs)	Final Wt.(lbs)
150018	101/10/10/16		
AFTER CINDER BLOCK VII WILLIAM	£		
	7 - 44	•	

** Secure pipe to prevent pipes from rolling	Take Pictures		
# 2 Rack B's Characteristics.	3 #6		
START 430 LBS	<i>></i>		
1500 Les Initial Wt.(lbs) Final Wt.(lbs)	<u>Materials</u>	Initial Wt.(lbs)	Final Wt.(lbs)
AFTER STEEL PIPE (V)			
POC			
CLAY PIRE TOTAL	WWW	- CINDER BLOCK	
204 LBS	Take Pictures	626 1Bs	
	iake ricioles		
** SP-Spiked Steel Pipe, SC-Spiked Clay Pipe, SD-Spiked Cinde			
CP-Comtaminated Steel Piep, CC-Cont. Clay Pipe, CD-Con	nt. Debris		
Total Weight of the two racks must be less than 3,000 Lbs.			
Mark Locations of Thermocouples			
Mark tocalions of memocoopies			
			Burner
Par			Burner
Door Rack B		ack A	
Door Nock 5			1
Control of the Contro			ri .
	E		1.6
Roll Calls and Close Furnace Door	H ·	rsonnel are account	
	Close and secure	n initial this checkli furnace door	oi ui ieji.
	The store time secure	jamet am.	
Complete Spike Sample Weigh Sheet			
** SEE NEXT PAGE FOR AFTERBURNER and FURNACE STAR	T-UP SEQUENCE		

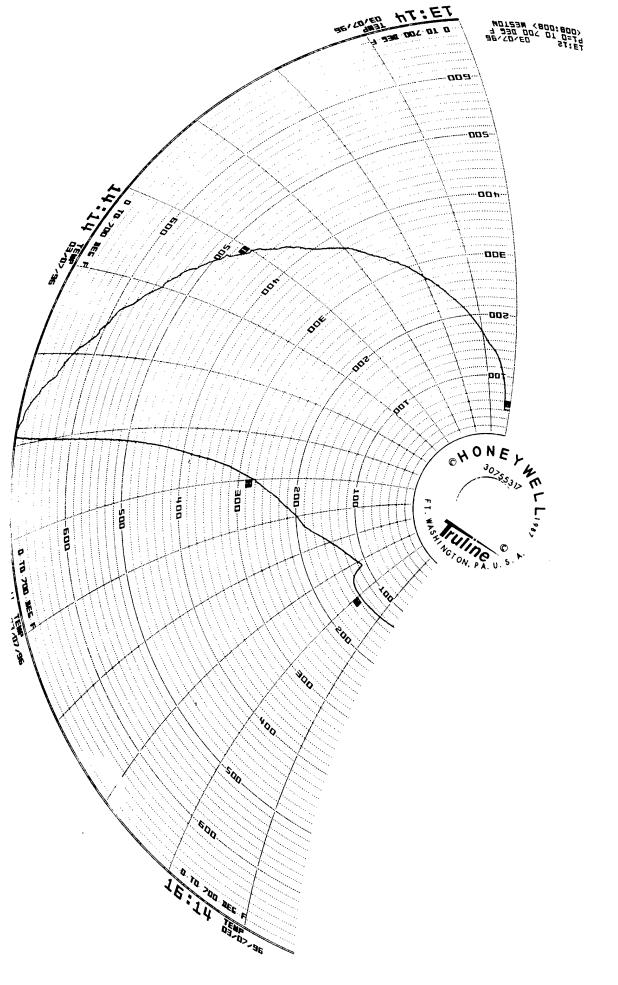
. •

Date	Date:				
îme	Soak Time: Soak Temp:				
71 j	RBURNER START-UP	Initial and record time for each iter			
777	Start "I.D. FAN". Adjust fran speed t	to maintain a system draft < -0.5 In. WC			
Ħ	Start "Pre-Mix AIR BLOWER". Adjust fan speed to maintain <-0.5 In.WC				
##	Start "OXIDIZER" (Burnes). Adjust tan speed to maintain <-0.5 In.WC				
	Once the burner has started, the control	system will initiate a purge sequence.			
	The pilot will then attempt to light the bu	urner at low fire.			
田	Start "DATALOGGER" Purshbuttons o	on the Computer.			
IL		. Adjust fan speed to maintain <-0.5 in.WC			
7					
	& 1200 F: :Time: The op	he burner is at low fire, burner control will be released to the operator. erator must adjust gas flow and 1D fan speed to maintain temperature			
	& 1800F: :Time 1800°.	F and system drast 'a; <-0.5 In HC.			
CI ID N		•			
FURIN	ACE START-UP	Initial and record time for each item			
	Set Bleed Air Damper to 75%				
剙	Turn Furnace Key to "BLOWER" Post	tion. Adjust ID fan speed to maintain <-0.5 In.WC			
Set Controller to "MANUAL". Set controller output to 0.0					
<u>##</u>	Turn Furnace Key to "BURNER" Post				
_	Verify "INTERLOCK OK" Light is ener	gized.			
_	Once the burner started, the control syste	em will initiate a nurge sequence			
	The pilot will then attempt to light the but	rner at low fire.			
14	Open Bleed Air Valve to 100%				
带					
200	Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace temperatures during ramp-up hourly, on the control room log sheet.				
	VD fan speed to maintain < 0.5 In WC. at	burner control will be released to the operator. The operator must adjust Berburner temp & 1800 Deg F, and furnace temp & SOAK temperature.			
II)					
Zan '	Manually Log Operating Parameters.				
	Use the attached Log Sheet to record all a	operating parameters at least hourly.			
ļ	SOAK TIMES and TEMPERATURES will	vary from test to test.			
	** USE NEXT PAGE(S) TO LOG OPERA	ATING PARAMETERS			
COOL-	-DOWN	Initial and record time for each item.			
B	Turn Furnace Key to "BLOWER" After				
OP)	Turn Furnace Key to "BLOWER" After lowering Furnace Temp to 200 Deg. F. STOP "OXIDIZER" and "AilR BLOWER"				
CHA	SIUT Computer Datalogiger when a	all thermocouples indicate less than 150 Deg F.			
	•	IG PROCEDURES IN APPENDIX "R" OF HASP.			

1.34 1.34

HOURL		TALOG (of	į
Bota:	7	MARCH	96	_
Time:				

Tag	Description	Unit	1044	1345 1580		
1-8	J. J	J	1300 Time:	1343 1300		
FURNACI	FURNACE					
P1T-232	Fuel Gas Pressure	M.WC	383	12.63		
FIT-231	Fuel Gas Flow	CFH	0	195 202		
P1T-222	Combustion Air Prossure	h.WC	24.2)	254 25.47		
FIT-221	Combustion Air Flow	CFH	(224)	9977 9963		
P1T-158	Chamber Pressure	br.WC	31 -	-14 -14		
T1T-201	Recorder Temperature	Dog.F	46	627 701		
TIT-202	Furnece Exit Gas Temp (Control)	Dog.F	44	503 570		
TIT-203	Material Thermocouple #1	Deg.F	49	480 774		
T1T-204	Meterial Thermocouple #2	Dog.F	50	266 312		
TIT-205	Material Thermocouple #3	Deg.F	46	528 598		
T1T-206	Material Thermocouple #4	Dog.F	42	ldo1 730		
~·T-207	Material Thermocouple #5	Dog.F	43	467 719		
AFTERBU	AFTERBURNER 46 561 C20					
TIT-131	Combustor Burner Temp. Control	Dag. F	412	1846 1824		
FIT-148	Fumos Flow	CFM	2335	2046 1030		
P1T-151	Funes Pressure (Funese-Braft)	MIC	,46	45 .27		
TIT-145	Combestor Temperature	Dog. F	1479	1891 1813		
PIT-133	Fuel Pressure	PSIG	.84	.45,38		
TIT-121	Fuel Gas Flow	CAM	1103	632 (027)		
CEM						
80x-8	Interconnecting Duct NOx	до т	-,2	9,1 6.1		
THC-B	Interconnecting Duct THC	др т	104	29.0 41.8		
C 0	Stack's CO	ppm	1.5	.5 .5		
THC '	Stack's THC	ppm	5,0	9 9		
-mon NO	Steel HO Duct NO	д рт	4	10,3 4.1		
802	Stack 502	ppm	3.5	2.0 2.0		
	Stech's 02	%	12.38	9.8 12.25		
CO2	Stack's CO2	*	544	7.28 5.74		
TIT-300	Ambient Temp	Deg. F	36	35		
Weather Service	Relative Hamidity	%	90	86		
	,		· · · · · · · · · · · · · · · · · · ·			



Test 16 C 300°F/kn Namp 0 - Soat Temp 600°F Soat Temp

Pre - START-UP (1 of 3)	Ramp-Up Rale: 300° F/L
Date: 3-7-96	Soak Time:
Time:	Soak Temp: 600°F
MECHANICAL	
	Initial ead
Inspection doors/manways are SECURED	l erify all valves, doors, inspection ports, manway, etc.
Gas Valves OPEN	have been returned to a position capable of sustaining
View/Inspection Ports CLOSED	system operations.
Record Gas (Propane) Valve Position	•
ELECTRICAL	
	Initial eac
All Lockout/Tagouts (1-5) are ACCOUNTED.	
Furnace and Afterburner Control Breakers are	ON.
24 Verity Emergency Pushbuttons are NOT ENGA	GED.
BUMP Motors and switch to "AUTO"	
Furnace Combustion Blower (M-220)	Lowis Gold rolection (A)
Afterburner Combustion Blower (M-130)	l'erifi field selector switchess are in "Al TO" after
Afterburner I.D Fan (M-158)	all motors have been "BUMPED" to verify operations
Place Atterburner Switch in REMOTE	
Calibrate CEM	
Dio in the A.M.	Tank Recorded Adjustment (Y/N)
DIC INTER PARTY	Values Values
Interconnecting Duct - NOx	
Interconnecting Duct - THC	
Stack NOx	
Stack SO2	
Stack THC	
Stock CO	
Stack O2	
Stack CO	
** Verify that all regulators for Calibration Gas Tanks	are CLOSED
Datalogger/Computer is ON	
Record Time (Computer Clock)	
Record Ambient Temperature (TIT-300)	
Record Ambient Humidity (call Weather Service)	564-3010 or 945-7000)
Pre - Spike Activities	
Lock-out all Motors: Complete Exclusion Log	
Secure Equipment Pad and Access Road w/ Chair	
Spike Test Materials and Furnace Test Plate:	TS
VENU YEST MILICULE COOPERATE LANDING.	

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	Test Number	
ADING/UNLOADING (2 off 3)	Ramp-Up Rate:	
Date:	Soak Time: Soak Temp:	
Time:	Sook (emp.	
LD ACTIVITIES		Initial each iten
Load Furnace with Materials and Thermocouples	For each rack hin, provide a descr	iption in
Food Filings with Waterials and Inelitiocophes	terms of contents, appearance, mo	
# / Rack A's Characteristics.	Refer to loading procedures for ins	
	#5	
Initial Wt.(lbs) Final Wt.(lbs)	Materials Initial Wt. (lbs)	Final Wt.(lbs)
1497/3	7-1-1-1	
** Secure pipe to prievent pipes from rolling	Take Pictures	
Rack B's Characteristics.		-
Thousand the second sec	#3 #6	
initial W t.(lbs) Final Wt.(lbs)	Materials Initial Wt.(lbs)	Final Wt.(lbs)
1486/6	D:001	
	O ! O _	
1		
	Take Pictures	
** SP-Spiked Steel Pipe. SC-Spiked Clay Pipe. SD-Spiked Cin	oder Blocks	
CP-Comtaminated Steel Piep, CC-Cont. Clay Pipe, CD-Co	ont. Debris	
Total Weight of the tiwo racks must be less than 3,000 Lbs.		
Mark Locations of Thermiocouples		
		Burner
# 7		
Door Rack B	Rack A	:
		198 4
Roll Calls and Close Furmace Door	l'erifi: all site personnel are acco	
A MARIAN MA	Have each person initial this ched Close and secure furnace door.	cklist at left.
(A store to ear	fic tose and secure jurnace door.	
Complete Spike Sample Welgh Sheet		
** SEE NEXT PAGE FOR AIFTERBURNER and FURNACE STA	ART UR CECUIENCE	

Da:		Rmp-Up Time: Soak Time: Soak Temp:
加加	Start "Pre-Mix AIR BLOW	Initial and record time for each item on speed to maintain a system draft < -0.5 In. WC ER". Adjust tan speed to maintain <-0.5 In.WC Adjust tan speed to maintain <-0.5 In.WC
	The pilot will then attempt to Start "DATALOGGER" Purs	the control system will initiate a purge sequence. o light the burner at low fire. shbuttons on the Computer. 800 Deg. F. Adjust fan speed to maintain <-0.5 in.WC
₩	ē 600 F: :Time ē 1200 F: :Time ic 1800F: :Time	Once the burner is at low fire, burner control will be released to the operator. The operator must adjust gas flow and ID fan speed to maintain temperature 1800°F and system draft 'a <-0.5 In WC.
FUR COMPANIES	NACE START-UP Set Bleed Air Damper to Turn Furnace Key to "BL:C Set Controller to "MANUA Turn Furnace Key to "BUI Verity "INTERLOCK OK" #1	OWER" Position. Adjust ID fan speed to maintain <-0.5 in.WC AL". Set controller output to 0.0 RNER" Position.
	The pilot will then attempt to Open Bleed Air Valve to Ramp-Up Furnace Temp	•
1 0 2	Once the burner is operating	at low fire, burner control will be released to the operator. The operator must adjust 0.5 In W.C. afterburner temp @ 1800 Deg F, and furnace temp @ SO.4K temperature.
:00I	SOAK TIMES and TEMPERA SE NEXT PAGE(S) TO: I DOWN	o record all operating parameters at least hourly. ATURES will vary from test to test. LOG OPERATING PARAMETERS Initial and record time for each item
	STOP "OXIDIZER" and "Alli	OWER" After towering Furnace Temp to 200 Deg. F. R BLOWER" Ger when all thermocouples indicate less than 150 Deg F.

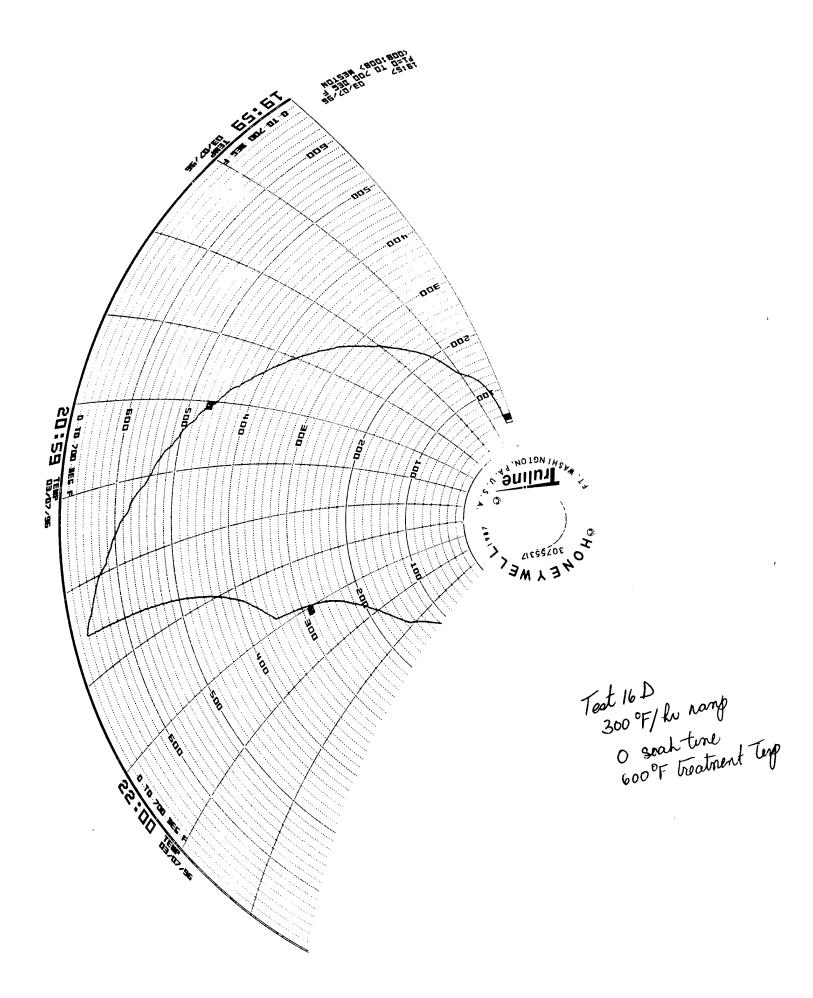
HOUR Area 7mm	7 10 AR 96) -					Test Mun Anny-Up I Soak T Soak Ti	tato: tato:	16 F 00°F) F //	er.					
Tag	Description	Unit	âtso	22												
FURNAC	Ē		Time:													
P1T-232	Fuel Gas Prossure	h.WC		9.76												
FIT-231	Fuel Gas Flow	CFH	136	58												
PIT- 22 2	Combustion Air Pressure	h.WC	2525	254												
FIT-221	Combustion Air Flow	CFH	18141													
P1T-158	Chamber Procesure	in.WC		-, 42												
TIT-201	Recorder Temperature	Deg.F	443													
TIT- 20 2	Furnace Exit Gas Tomp (Control)	Dag.F		3/3												
TIT- 20 3	Material Thermocouple #1	Dag.F	429	457												
TIT- 204	Material Thermocouple #2	Dog.F	250													
TIT- 20 5	Meterial Thermocouple #3	Dog.F	3/3													
TIT-206	Material Thermocouple #4	Dag.F	420	39/												
ग र-20 7	Meterial Thermocouple #5	Deg.F	447						-							
AFTERBU	AU9.		373			1				<u> </u>	•	<u> </u>		<u> </u>		
			(000	1011		T		- 1	T	Ī	T	T				
117-121	Combuster Burner Temp. Control	Dog. F	1822					-	_						-	-
FIT-149	Funes Flow	CFM	2049							-		-				
P1T-151	Fumos Procesuro (Furnece Draft)	MIC	0.29							-						
T1T-145	Combustor Temperature	Dag. F	1807						+			-				-
PIT-133	Fuel Procesure	PSIG	.47							-	 		ļ	-		
TIT-121	Fuel Gae Flow	CFM	6	1094				i		1	<u></u>	L	<u> </u>		<u> </u>	<u> </u>
CEM												-				
NOx-B	Interconnecting Duct NOx	да т	3.9	1.1												
THC-B	Interconnecting Duct THC	pp m	40.8	43,8												
C O	Stact's CO	man	0.5													
	Stack's THC					_										
THC		ppm	2.8	0.8											-	
10x	SHOPE DUCT NO	ppm .	25			\dashv		_								-
502	Stack 802	ppm 	11.40	, 220			_			-						-
?	Stack's 02	%			+ +								 			-
:02	Stack's CO2	*	6.39	13.78						<u></u>		<u></u>	l	<u> </u>		L

30° 30 16 14

Deg. F

Relative Humidity

TIT-300



Pre -	START-UP (1 of 3)	s	resi Numbei :amp-Up Raie	300°F/h
	Date: 8 MAR 96		Soak Time:	2 HRS
	Time: 1050			600°F
MEC:	HANICAL			Initial each
\nearrow	Inspection door (many			
	Inspection doors/manways are SECURED	l'erify all v	valves, doors,	inspection ports, manway, etc.
<u> </u>	Gas Valves OPEN	have been	returned to a	position capable of sustaining
	View/Inspection Ports CLOSED	system ope	rations.	
6%	Record Gas (Propane) Valve Position			
LEC	TRICAL			Initial each i
TH.	All lockout/Tagouts (1.5) and Accountries			" indi each i
五	All Lockout/Tagouts (1-5) are ACCOUNTED.			
<u>n</u>	Furnace and Afterburner Control Breakers are Ol			
	Verity Emergency Pushbuttons are NOT ENGAGE	D.		
#	BUMP Motors and switch to "AUTO"			
-		Verify field	selector suite	chess are in ".11 TO" after
	Afterburner Combustion Blower (M-130)	all motors h	iave been "Bl	MIPED" to verify operations.
	Afterburner I.D Fan (M-158)	-		and the strings open unitaris.
	Place Afterburner Switch in REMOTE			
	Calibrate CEM	Tank	Recorded	Adjustment (Y/N)
	· ·	Values	Values	
	✓ Interconnecting Duct - NOx	75.6	75	81
	Interconnecting Duct - THC	31.1	31	B Y
	- Stock NOX DUCT NO			
	Stack SO2	75.6 126,	126	N
	Stack THC	31.1	31	N
	Stack CO		124.8	N
	Stack O2	5.97	6.0	
	Stock CO2	4.89	4.9	
	** Verify that all regulators for Calibration Gas Tanks are	e CLOSED	<u></u>	
Ŧ	Datalogger/Computer is ON	- 1000217		
	Record Time (Computer Clock)			
	Record Ambient Temperature (TTT-300)			
	Record Ambient Humidity (call Weather Service 664-	3010 or 945-7000))	
,	.			
28	Pre - Spike Activities			
<u> 28</u>	-			
<u>DE</u> .	Lock-out all Motors: Complete Exclusion Log			
<u> </u>	-			

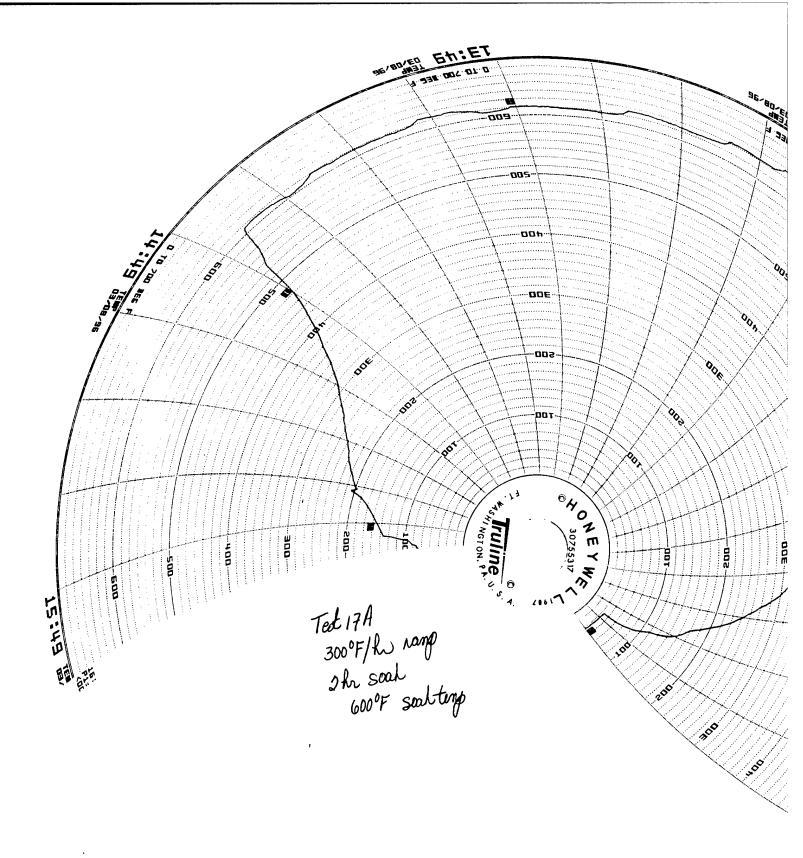
	Test Number	17A
ADING/UNLOADING (2 of 3)	Ramp-Up Raie:	300°F/LV 2kv
m - I · · ·	Soak Time:	<u> 2kv</u>
Date:	Soak Temp:	600°F
LD ACTIVITIES		Initial each item.
Load Furnace with Materials and Thermocouples	For each rack bin, provide a	description in
7N	terms of contents, appearance	e, moisture, etc
Rack A's Characteristics.	Refer to loading procedures	for Instructions.
5TAPT 600LB	7-45	
2/02 Los (nitial Wt.(lbs) Final Wt.(lbs)	Initial Wt.(III	bs) Final Wt.(lbs)
	DONO JEDO STEEL	0EB
FROM #1/ 354 LBS TNT TESTS #15 354185	XXX THU FROM #1	1 434185
TESTS #15 :354185	XXX THY FROM #1	360x85
TOTAL 706285		794 165
** Secure pipe to prevent pipes from rolling	Take Pictures	
#7 Book On Characteristics		
#2 Rack B's Characteristicis.	,#3	
17900	Materials — #6 Initial Wt.//	bs) Final Wt.(lbs)
Initial Wt. (lbs) Final Wt. (lbs)		5 5/
STEEL PIPE 1494		
240185		
	E	
CLAY PIPE	TITI CINOB	Biouss LBS
204185	Take Pictures	LES .
	TORE ! ICIO!CO	<u> </u>
** SP-Spiked Steel Piper, SC-Spiked Clay Pipe, SD-Spiked	Cinder Blocks	
CP-Comtaminated Steel Piep, CC-Cont. Clay Pipe, CD		
Total Weight of the tiwo racks must be less than 3,000 L	bs.	
7		
Mark Locations of Thermiocouples		
*7		Burner
x /	i.,	[
Door Rack B	Rack A	
	The state of the s	
Roll Calls and Close Furmage Dogs	Verifi all site personnel are	accounted for
Nevin 2. Herreforms	Have each person initial this	
MI. 7.	Close and secure furnace do	
Jun yen	u	
Complete Spike Sample Weigh Sheet		•
Complete Spike Sample Weigh Sheet		
** SEE NEXT PAGE FOR AFTERBURNER and FURNACE	START-UP SEQUENCE	

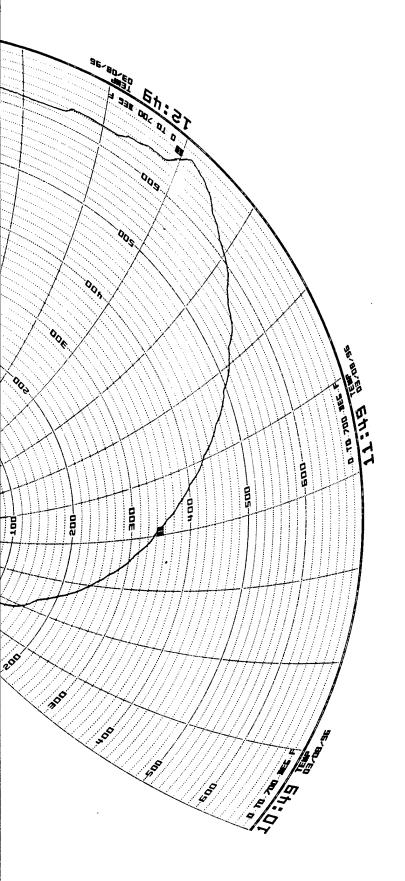
Time: Soak Temp:	START-	UP (3 of 3)		# 17 A
Start "D. FAN". Adjust than speed to maintain a system draft < 0.5 in. WC Start "Pre-Mix Alk BLOWER". Adjust tan speed to maintain <-0.5 in. WC Start "Pox. Mix Alk BLOWER". Adjust tan speed to maintain <-0.5 in. WC Once the burner has started, the control system will initiate a purge sequence. The pitor will then attempt so light the burner at low fire. Start "DATALOGGER" pushbuttons on the Computer. Warm-Up Burner up to 1800 Deg. F. Adjust tan speed to maintain <-0.5 in. WC **Adjust tan speed to maintain temperature **Inne** **Inne*** **Inne**	_		SOOK HIME:	
Start "I.D. FAN". Adjust tan speed to maintain a system draft < 0.5 in. WC Start "Pre-Mix AIR BLOWER". Adjust tan speed to maintain < 0.5 in. WC Start "Pox. Mix AIR BLOWER". Adjust tan speed to maintain < 0.5 in. WC Once the burner has started, the control system will initiate a purge sequence. The pitor will then attempt to light the burner at low fire. Start "DATALOGGER" pushbuttons on the Computer. Warm-Up Burner up to 1800 Deg. F. Adjust tan speed to maintain < 0.5 in. WC **According to the burner is at low fire, burner control will be released to the operator. The operator must adjust gas flow and 1D fm speed to maintain temperature **1800F** Imme **Inone** Inone the burner is at low fire, burner control will be released to the operator. The operator must adjust gas flow and 1D fm speed to maintain temperature **Inone the burner is at low fire, burner control will be released to the operator. The operator must adjust gas flow and 1D fm speed to maintain temperature **Inone the burner to 75%* Turn Furnace Key to "BLOWER" Position. Adjust 1D tan speed to maintain <-0.5 in.WC Set Controller to "MANIBAL". Set controller output to 0.0 Turn Furnace Key to "BLOWER" Position. Verity "INTERLOCK OK Bight is energized. Once the burner started, the control system will initiate a purge sequence. The pilot will then attempt to light the burner at low fire. Open Bleed Air Valve to 100% Ramp-Up Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintain Ramp-U				
Start "Pre-Mix Alk BLOWER". Adjust fan speed to maintain <-0.5 in.WC Start "OXIDIZER" (Burner). Adjust fan speed to maintain <-0.5 in.WC Once the burner has started, the control system will initiate a purge sequence. The pilot will then attempt so light the burner at low fire. Start "DATALOGGER" Pushbuttons on the Computer. Warm-Up Burner up to 1800 Deg. F. Adjust ion speed to maintain <-0.5 in.WC & 600 F	_	URNER START-UP		Initial and record time for each iter
Stert "OXIDIZER" (Burner). Adjust fan speed to maintain <-0.5 in.WC Once the burner has started, the control system will initiate a purge sequence.	₹H 21	lart "I.D. FAN". Adjust ffai	speed to maintain a system o	traft < -0.5 In. WC
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STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.	-			np to 200 Deg. F.
·	⊘ 57C	OF "OXIDIZER" and "AllR I	ILOWER"	
·	A STO	OP Computer Datalogge	r when all thermocouples indic	cale less than 150 Dea F.
			•	

HOURL		TALOG		
Bate:	8	MARC	H	96
Time:				

Test Humber:	17A
Ramp-Up Rate:	300°/HR
Soak Time:	2 HRS
Sock Temp:	600°

	1			1130	T	T	T		1	1					1 1	
Tag	Description	Unit	1100	1138	1200	1230	/300	1380	1400	1430	1500					
FURNACE	•		Time:		•	,	•	Ţ			, , , , , , , , , , , , , , , , , , , ,			-		
P1T-232	Fuel Gae Promure	h.WC	3.95	11.6	12.08	12.66	12,49	1209	11.79	11.82	3.71					
FIT-231	Fuel Gas Flow	CF#	0	99	129	180	163	138	123	120	8					
P1T-222	Combustion Air Procesure	M.WC	24.72	2586	25,91	2585	2576	25.69	25.7/	2563	24.35		\perp			
FIT-221	Combustion Air Flow	CFH	12339	10377	10178	10080	10102	10119	10180	1078	12200		_			
PIT-158	Chamber Procesure	h.WC	-,34	-,22	-17	-,13	-,13	-12	-13	13	25			_		
TIT-201	Recorder Temperature	Dag.F			380						402					
111- 20 2	Furnece Exit Gas Temp (Control)	Dag.F	33	205	301	456	543	547	545	551	373					
TIT-203	Material Thermocouple #1	Dag.F	45	166	284	470	619			621						
TIT-204	Meterial Thermocoupie #2	Dag.F	29	160	248	412	1									
T1T-205	Material Thermocouple #3	Deg.F			369		628	620	636	635	391					
TIT-200	Meterial Thermocoupie #4	Dag.F	32	252	366	543	627	6//	594	599	37/					
91-207	Material Thermocouple #5	Day.F	32	282	412	608	686	654	644	638	396					
AFTERBU	Material Temp Avg		34	223	336	516	621	617	64	6/3	430				· · · · · · · · · · · · · · · · · · ·	
TIT-131	Combuster Burner Temp. Control	Dog. F	452	1841	1827	1836	1820	1850	1939	1812	1827					
FIT-149	Fumes Flow	CFM	2181	1989	2007	2008	2063	2060	2040	2032	2865					
PIT-151	Fumos Procesoro (Fumoso-Droft)	MWC	40	,26	,24	,21	,19	20	.20	-22	. 85					
TIT-145	Combuster Temperature	Dag. F	1509	1841	1846	1842	1841	1837	1825	1820	1836					
P1T-133	Fuel Pressure	PSIG	.85	,59	,53	,47	.38	-37	<i>ب</i> 32	.39	. 74	_				
TIT-121	Full Gas Flow Fan Inlet Temp	CFM	1096		769					631	972					
CEM	Fan Inlet Temp		35	191		427	512	523	504	5 28	364					
80x-8	Interconnecting Duct NOx	др т	-1.1	2,5	6.2	16.2	11.9	ブリ	7.0	7.0	1.9					
THC-B	Interconnecting Duct THC	ppm	13,4	42.0	35,9	286	22.6	21.9	24.1	24.6	0.8					
co	Stack's CO		1.0	,5	0.0	0,5	,5	.5	0.0	0.0	0.0					
THC	Stack's THC	pp:::		0.0	,1	.	,2	./	.,	./	-/					
	Steelfollor Duct	ppm	-14			15.1		6.0			.6					
SO2	Stack \$02	pon .	3.0			2.5										
`,	Stack's 02	*	1283		- 1	- 1			1	- 1	l i		1			
CO2	Stack's CO2	*] [1	6.60	1		1	1	i						
TIT-300	Ambient Temp	Dog. F	29	29	29		29	30	30	32	29			T		
Weather Service	Relative Humidity	%	55		58			40			43					
	Tambury Honorty				1		10					1			1	





Pre - START-UP (1 of 3)	Romp-Up Rale: 30°F/W
Date: 9 MAR 94	Soak Time: 2 RV Soak Temp: (a00 P
MECHANICAL	Initial each ite
Inspection doors/manways are SECURED	l'erify all valves, doors, inspection ports, manway, etc.
Gas Valves OPEN	have been returned to a possition capable of sustaining
View/Inspection Ports CLOSED	system operations.
Record Gas (Propane) Valve Position	
ELECTRICAL	Initial each it
All Lockout/Tagouts (1-5) are ACCOUNTED	D.
Furnace and Afterburner Control Breakers	
Verity Emergency Pushbuttons are NOT EN	
BUMP Motors and switch to "AUTO"	
Furnace Combustion Blower (M-220)	Verify field selector switches are in "11 TO" after
Afterburner Combustion Blower (M-130)	all motors have been "BUMPED" to verify operations
Afferburner I.D Fon. (M-158)	- 4, 4, 4, 4 and 1
Place Afterburner Switch in REMOTE	
Calibrate CEM	Tank Recorded Adjustment (Y/N)
Cpt in Am	Values Values
Interconnecting Duct - NOx	
Interconnecting Duct - THC	The second secon
Stack NOx	
Stack SO2	
Stack THC	in the state of th
Stack CO	
Slock O2	
Stock CO	
** Verify that all regulators for Chlibration Gas	Tonks are CLOSED
Datalogger/Computer is ON	THIS WE CAMED
Record Time (Computer Clock)	
Record Ambient Temperature (TTT-300)	
Record Ambient Humidity (call Weather Sen	rvice 664-3010 or 945-7000)
The - Spike Activities	
Lock-out all Motors: Complete Exclusion Log	3
Secure Equipment Pad and Access Road w/	
Spike Test Materials and Furnace Test Plates	

	Test Number 17	7
NNG/UNLOADING (2 of 3)	Ramp-Up Rate:	
Date: 89 11/48, 74	Soak Time:	
Time:	Soak Temp:	
ACTIVITIES		Initial each iten
	For each rack hin, provide	
Load Furnace with Materials and Thermocouples	terms of contents, appeara	
Rock A's Characteristics	Refer to loading procedure	
Initial Wt.(lbs) Final Wt.(lbs)	Materials Initial W	t.(lbs) Final Wt.(fbs)
2028	RUMBIZMIC EED	
Pie Tin	#4	
" Secure pipe to prevent pipes from rolling	Take Pictures	
# 2 Rack Bs Characteristics.		
	 #3	
Initial Wt.(lbs) Final Wt.(lbs)	Materials Initial W	(1.(lbs) Final Wt.(lbs)
1494		
	00 0 76	
<u> </u>	7-7-1	
, 75		
	Take Pictures	
** SP-Spiked Sleef Pipe, SC-Spiked Clay Pipe, SD-Spike CP-Comtaminated Steef Piep, CC-Cont. Clay Pipe,		
Total Weight of the two racks must be less than 3.00		
	· — ·	
Mark Locations of Thermiocouples		
*7)!	Burner
Door X Rack B	Rack A	
l 🎸	. '	
	TOWNS OF THE PARTY	3
Roll Calls and Close Furnace Door	l'erifi: all site personnel a	re accounted for
Offell	Have each person initial t	his checklist at left
1 Am P	Close and secure furnace	door.
· I WILL DOOR		
Complete Spike Sample Welgh Sheet		
** SEE NEXT PAGE FOR AFTERBURNER and FURNAC	F START-UP SECHENCE	

1KT-UP (3 of 3)	•	kmp-Up Time:
me:		Soak Time: Soak Temp:
SURNER ST	ART-UP	Initial and record time for each item
Start "I.D. FAN	i". Adjust ffan	speed to maintain a system draft < -0.5 in. WC
= 9/9		*. Adjust tan speed to maintain <-0.5 In.WC
3 96		Adjust fan speed to maintain <-0.5 In.WC
Once the burne	r has starteal, th	e control system will initiate a purge sequence.
The pilot will th	ien attempt #0 li	ght the burner at low fire.
Stort "DATALO	GGER" Pushl	buttons on the Computer.
Warm-Up Bu	ner up to 1180	10 Deg. f. Adjust tan speed to maintain <-0.5 ln.WC
ē 600 F:	:Time	Once the burner is at low fire, burner control will be released to the operator.
â 1200 F	Time	The operator must adjust gas flow and 1D fan speed to maintain temperature
4 1800F	:Time	1800°F and system draft 'â; <-0.5 In II'C.
RNACE START-	UP	Initial and record time for each iter
20	Dammar A. 3	
Set Bleed Air	namber to 1	5%
o = 1	-	
Turn furnace	Key to "BL:OV	5% VER" Position. Adjust ID fan speed to maintain <-0.5 in.WC ". Set controller output to 0.0
Turn Furnace Set Controlle	Key to "BL:OV t to "MANUA!	VER" Position. Adjust ID fan speed to maintain <-0.5 in.WC 1". Set controller output to 0.0
Turn furnace Set Controlle Turn furnace	Key to "BLOY t to "MANUA! Key to "BURN	VER" Position. Adjust ID fan speed to maintain <-0.5 in.WC 1". Set controller output to 0.0
Turn furnace Set Controlle Turn furnace Verity "INTER	Key to "BLOY t to "MANUA! Key to "BUR! LOCK OK" Rig	VER" Position. Adjust ID fan speed to maintain <-0.5 in.WC I". Set controller output to 0.0 IER" Position. It is energized.
Turn furnace Set Controlle Turn Furnace Verity "INTER	Key to "BL:OV t to "MANUA! Key to "BUR! LOCK OK" Rig	VER" Position. Adjust ID fan speed to maintain <-0.5 in.WC 1". Set controller output to 0.0 IER" Position.
Turn furnace Set Controlle Turn furnace Verily "INTER! Once the burne The pilot will to	Key to "BL:OV t to "MANUA! Key to "BUR! LOCK OK" Rig	VER" Position. Adjust ID fan speed to maintain <-0.5 in.WC L". Set controller output to 0.0 IER" Position. In is energized. In it is energized.
Turn furnace Set Controlle Turn Furnace Verity "INTER Once the burne The pilot will to Open Bleed Ramp-Up Fu	Key to "BL:ON to "MANUAL Key to "BURN LOCK OK" Rig restarted, the co then attempt to it andce Temp to	VER" Position. Adjust ID fan speed to maintain <-0.5 in.WC L". Set controller output to 0.0 IER" Position. In is energized. Introl system will, initiate a purge sequence. Ight the burner at low fire 100% To Soak Temp. Maintain Ramp-Up Rafe, System Draft and Temp's
Turn furnace Set Controlle Turn Furnace Verity "INTER Once the burne The pilot will to Open Bleed Ramp-Up Fu	Key to "BL:ON to "MANUAL Key to "BURN LOCK OK" Rig restarted, the co then attempt to it andce Temp to	VER" Position. Adjust ID fan speed to maintain <-0.5 in.WC L". Set controller output to 0.0 IER" Position. In is energized. In it is energized.
Turn furnace Set Controlle Turn Furnace Verity "INTER: Once the burne The pilot will to Ramp-Up Furnace Once the burne	Key to "BLOW to "MANUAL Key to "BURN LOCK OK" Rig to started, the content of the attempt to the Air Valve to 1 trace Temp to trace temperating attempt at a perating at	VER" Position. Adjust ID fan speed to maintain <-0.5 in.WC L". Set controller output to 0.0 IER" Position. In is energized. Intral system will, initiate a purge sequence. Ight the burner at low fire 100% To Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Tures during ramp-up hourly, on the control soam log sheet.
Turn furnace Set Controlle Turn Furnace Verity "INTER: Once the burne The pilot will to Ramp-Up Furnace Once the burne	Key to "BLOW to "MANUAL Key to "BURN LOCK OK" Rig to started, the content of the attempt to the Air Valve to 1 trace Temp to trace temperating attempt at a perating at	VER" Position. Adjust ID fan speed to maintain <-0.5 in.WC L". Set controller output to 0.0 IER" Position. In is energized. Introl system will, initiate a purge sequence. Ight the burner at low fire 100% To Soak Temp. Maintain Ramp-Up Rafe, System Draft and Temp's
Turn furnace Set Controlle Turn Furnace Verity "INTER! Once the burne The pilot will to Ramp-Up fur Record furne ID fan speed to	Key to "BLOW to "MANUAL Key to "BURN LOCK OK" Rig to started, the content of the attempt to the Air Valve to 1 trace Temp to trace temperating attempt at a perating at	VER" Position. Adjust ID fan speed to maintain <-0.5 in.WC L". Set controller output to 0.0 IER" Position. In is energized. In it i
Turn furnace Set Controlle Turn Furnace Verity INTER Once the burne The pilot will to Ramp-Up Fur Record Furna Once the burne ID fan speed to Cise the attache	Key to "BL:ON to "MANUAL Key to "BURN LOCK OK" Rig To started, the co then attempt to the trace Temp to trace Temp to trace temperation or is operating a traintain <-0.5 Topographing I and Log Sheet to	VER" Position. Adjust ID fan speed to maintain <-0.5 in.WC I". Set controller output to 0.0 IER" Position. In is energized. In it i
Turn furnace Set Controlle Turn Furnace Verity INTER Once the burne The pilot will to Ramp-Up Fur Record Furna Once the burne ID fan speed to Cise the attache	Key to "BL:ON to "MANUAL Key to "BURN LOCK OK" Rig To started, the co then attempt to the trace Temp to trace Temp to trace temperation or is operating a traintain <-0.5 Topographing I and Log Sheet to	VER" Position. Adjust ID fan speed to maintain <-0.5 in.WC L". Set controller output to 0.0 IER" Position. In is energized. In it i
Turn furnace Set Controlle Turn Furnace Verity "INTER! Once the burne The pilot will to Ramp-Up Furnace Record furne ID fan speed to Wanually Log Use the attache SOAK TIMES "USE NEXT I	Key to "BLOW to "MANUAL Key to "BURN LOCK OK" Rig To started, the co then attempt to the trace Temp to trace Temp to trace temperating a traintain <-0.5 To Operating 1 To ALO Sheet to and TEMPERATION	VER" Position. Adjust ID fan speed to maintain <-0.5 in.WC I". Set controller output to 0.0 IER" Position. In is energized. In it i
Turn furnace Set Controlle Turn Furnace Verity INTER Once the burne The pilot will to Ramp-Up Fur Record Furna Once the burne ID fan speed to Cise the attache SOAK TIMES	Key to "BLOW to "MANUAL Key to "BURN LOCK OK" Rig To started, the co then attempt to the trace Temp to trace Temp to trace temperating a traintain <-0.5 To Operating 1 To ALO Sheet to and TEMPERATION To The MANUAL TEMPERATION	WER" Position. Adjust ID fan speed to maintain <-0.5 in.WC It". Set controller output to 0.0 IER" Position. In it is energized. Introl system will initiate a purge sequence. Ight the burner at low fire IOO% IO Soak Temp. Maintain Ramp-Up Rate, System Draft and Temp's. Introl system will initiate a purge sequence. In it is energized.
Turn furnace Set Controlle Turn Furnace Verity "INTER: Once the burne The pilot will to Ramp-Up Fur Record Furna Once the burne ID fan speed to Vise the attache SOAK TIMES of USE NEXT IN	Key to "BLOW to "MANUAL Key to "BURN LOCK OK" Rig To slarted, the co then attempt to the Air Valve to 1 trace Temp to trace Temp to trace temperating a maintain <-0.2 TO Operating 1 To A Log Sheet to and TEMPERATION TO AGE(S) TO 10	WER" Position. Adjust ID fan speed to maintain <-0.5 in.WC It". Set controller output to 0.0 IER" Position. It is energized. In it is energized. It is energize
Turn furnace Set Controlle Turn furnace Verity "INTER: Once the burne The pilot will to Ramp-Up fur Record furna Once the burne ID fan speed to Vise the attache SOAK TIMES of USE NEXT IN IOL-DOWN Turn furnace	Key to "BLOW to "MANUAL Key to "BURN LOCK OK" Rig To slarted, the co then attempt to the Air Valve to 1 trace Temp to trace Temp to trace temperating a maintain <-0.2 TO Operating 1 To A Log Sheet to and TEMPERATION TO AGE(S) TO 10	VER" Position. Adjust ID fan speed to maintain <-0.5 in.WC ". Set controller output to 0.0 IER" Position. In it is energized. In it
Turn furnace Set Controlle Turn Furnace Verity "INTER! Once the burne The pilot will to Ramp-Up fur Record furne ID fan speed to Wanually Log Use the attache SOAK TIMES "USE NEXT II IOL-DOWN Turn Furnace STOP "OXIDIT	Key to "BL:ON to "MANUAL Key to "BURN LOCK OK" Rig To started, the content of the attempt to the Air Valve to the attempt to the trace Temp to	VER" Position. Adjust ID fan speed to maintain <-0.5 in.WC ". Set controller output to 0.0 IER" Position. In it is energized. In it

HOURL	Y DATALE	Gof]
Bata:	8 MAR.	96
Time:	•	

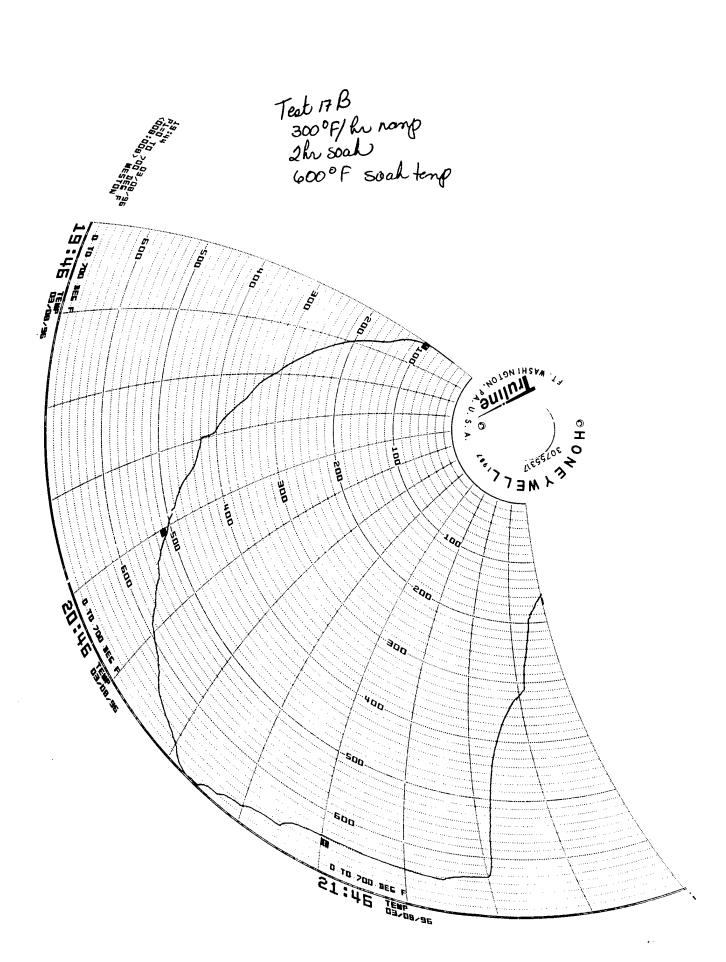
Test Musico: 17B.

Remp-Up Rate: 300 F/hr

Seek Time: 3 hr

Seek Temp: 600 F

Tag	Description	Unit	2000 2030 2100 2130 2200
FURNACE	-		Time:
TORRAGE			
P1T-232	Fuel Gas Pressure	h.WC	11.09 1210 1285 1282 12.43
FIT-231	Fuel Gas Flow	CFH	77 111 167 155 129
P11-222	Combustion Air Processe	in.WC	26.27 26.36 26.47 26.45 26.45
FIT-221	Combustion Air Flow	CFH	10/1/10375 10/77 10213/10297
P1T-158	Chamber Pressure	h.WC	25 19 -15 14 13
TIT-201	Recorder Temperature	Deg.F	195 349 565 679 64/
TIT- 20 2	Furnece Exit Gas Temp (Control)	Dog.F	156 262 436 554 549
TIT-203	Material Thermocouple #1	Dog.F	131 252 457 616 60
T1T-204	Material Thermocouple #2	Dag.F	178 309 507 632 604
TIT-205	Material Thermocouple #3	Dog.F	106 176 330 487 538
TIT-206	Material Thermocouple #4	Dag.F	203 339 544 656 635
97-207	Meterial Thermocouple #5 MATERIAL TEMP AUG.	Dag.F	203 360 571 698 653
AFT ER BU	•		166 287 488 609 507
TIT-131	Combuster Burner Temp. Control	Dog. F	1835 1818 1817 1800 1824
FIT-149	Furnes Flow	CFM	2020 1998 2022 1998 2011
PIT-151	Fumos Prossure (Furneco Draft)	hWC	.31 .27 .26 .25 .25
TIT-145	Combustor Temperature	Deg. F	1839 1825 1827 1839 1834
PIT-133	Fuel Pressure	PSIG	.69-52.47.35.36
777 494	End Can Elam	CFM	855 745 638 534 560
TIT-100	FAN INLET TEMP.		525
CEM			
MOx-8	Interconnecting Duct NOx	др т	0.4 2.3 4.7 5.2 3.2
THC-B	Interconnecting Duct THC	ppm	493 38.0 28.1 21.8 22.8
¢0	Stech's CO	ррт	0.5 0.5 1.0 1.0 05
THC	Stack's THC	дрт	0.2 0.2 0.2 0.1 0.1
10 0x	SLANDER NO DUCT	дрг п	-, 21.53,74.53.2
\$02	Stack S02	ррт	25 30 30 30 30
ن	Stack's 02	*	15.18 15.38 15.42 15.45 15.45
C02	Stack's CO2	*	-16-16-14-14-14
T1T-300	Ambient Temp	Deg. F	22 21 21
Weather Service	Relative Humidity	070	68 67 64
	<u>, </u>	•	



Pre -	START-UP (1 of 3) Date: 1/ MAR 96 Time:	R	Test Number: omp-Up Rale: Soak Time: Soak Temp:	300°F/W 2HR 600°F
MECI	HANICAL			Initial each ite
19B	inspection doors/manways are SECURED	l'enfy all	alves. doors, i	nspection parts, manway, etc.
TAB	Gas Valves OPEN	l l		Pusition capable of sustaining
19E	View/inspection Ports CLOSED	system ope		
	Record Gas (Propane) Valve Position	н.		
ELEC	TRICAL			Initial each ite
TO A	All lankout/Tarouts (1.5) ACCOUNTS			"""O' EULH NE
NO I	All Lockout/Tagouts (1-5) are ACCOUNTED.			
	Furnace and Alterburner Control Breakers as			
THE S	Veilly Emergency Pushbuttons are NOT ENG	AGED.		
IJB.	BUMP Motors and switch to "AUTO"			
	Furnace Combustion Blower (M-220)	Tank. Cal	f salastus	ches are in ".11 TO" after
	Afterburner Combustion Blower (M-130) Afterburner LD Fon (M-158) Place Afterburner Switch in REMOTE	all motors	have been "Bl	These are in ACTO after "MIPED" to verify operations
gu)	Afterburner Combustion Blower (M-130) Afterburner I.D Fon. (M-158)	all motors Tank Values	have been "B! Recorded Values	Adjustment (Y/N)
gyr)	Afterburner Combustion Blower (M-130) Afterburner 1:D Fon (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Intercannecting Duct - NOx	all motors Tank	have been "Bl	MIPED" to verify operations
gy)	Afterburner Combustion Blower (M-130) Afterburner 1.D Fon (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC	Tank Values	have been "BI Recorded Values	MIPED" to verify operations Adjustment (Y/N)
(A)	Afterburner Combustion Blower (M-130) Afterburner 1:D Fon (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Intercannecting Duct - NOx Interconnecting Duct - THC Stack NOx Duct NO	Tank Values 75.6 60.1	Recorded Values	MIPED" to verify operations Adjustment (Y/N)
<i>A</i>	Afterburner Combustion Blower (M-130) Afterburner 1:D Fon (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stock NOx Duct NO Stock SO2	Tank Values 75.6 60.1 75.6 176.4	Recorded Values 75 60 75 726	Adjustment (Y/N)
April 1	Afterburner Combustion Blower (M-130) Afterburner I.D. Fon. (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx. Duct NO Stack SO2 Stack THC	Tank Values 75.6 60.1 75.6 126.4	Recorded Values 75 60 75 726	MIPED" to verify operations Adjustment (Y/N)
A	Afterburner Combustion Blower (M-130) Afterburner 1:D Fon (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stock NOx Duct NO Stock SO2	Tank Values 75.6 60.1 75.6 126.4 60.1 399.4	Recorded Values 75 60 75 726 60 399	Adjustment (Y/N)
AL)	Afterburner Combustion Blower (M-130) Afterburner 1:D Fon (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Intercannecting Duct - NOx Interconnecting Duct - THC Stack NOx Duct NO Stack SO2 Stack THC Stack CO	Tank Values 75.6 60.1 75.6 126.4 60.1 399.4 19.0	Recorded Values 75 60 75 126 60 399 19,0	Adjustment (Y/N)
gy)	Afterburner Combustion Blower (M-130) Afterburner 1:D Fon (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx Duc† NO Stack SO2 Stack THC Stack CO Stack CO Stack CO2	Tank Values 75.6 60.1 75.6 176.4 19.0	Recorded Values 75 60 75 726 60 399	Adjustment (Y/N)
J.B.	Afterburner Combustion Blower (M-130) Afterburner 1:D Fon (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx Duc† NO Stack SO2 Stack THC Stack CO Stack O2	Tank Values 75.6 60.1 75.6 176.4 19.0	Recorded Values 75 60 75 126 60 399 19,0	Adjustment (Y/N)
AB)	Afterburner Combustion Blower (M-130) Afterburner 1:D Fon (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stock NOx Duct NO Stock 502 Stock 7HC Stock CO Stock CO	Tank Values 75.6 60.1 75.6 176.4 19.0	Recorded Values 75 60 75 126 60 399 19,0	Adjustment (Y/N)
GB.	Afterburner Combustion Blower (M-130) Afterburner 1:D Fon (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx Duc† NO Stack SO2 Stack THC Stock CO Stock CO Stock CO Stock CO Stock COZ ** Ferify that all regulators for Calibration Gas Tan Datalogget/Computer is ON Record Time (Computer Clock)	Tank Values 75.6 60.1 75.6 176.4 19.0	Recorded Values 75 60 75 126 60 399 19,0	Adjustment (Y/N)
JB.	Afterburner Combustion Blower (M-130) Afterburner 1:D Fon (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stock NOx Duct NO Stock 502 Stock 7HC Stock CO Stock CO	Tank Values 75.6 60.1 75.6 126.4 60.1 399.4 19.0 19.0	Recorded Values 75 60 75 126 60 399 19.0	Adjustment (Y/N)
	Afterburner Combustion Blower (M-130) Afterburner 1:D Fon (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stack NOx Duc† NO Stack SO2 Stack THC Stock CO Stock CO Stock CO Stock CO Stock COZ ** Ferify that all regulators for Calibration Gas Tar Datalogget/Computer is ON Record Time (Computer Clock) Record Ambient Temperature (TTT-300) Record Ambient Humidity (call Weather Service) Pre - Spike Activities	Tank Values 75.6 60.1 75.6 126.4 60.1 399.4 19.0 19.0	Recorded Values 75 60 75 126 60 399 19.0	Adjustment (Y/N)
JB	Afterburner Combustion Blower (M-130) Afterburner 1.D Fon (M-158) Place Afterburner Switch in REMOTE Calibrate CEM Interconnecting Duct - NOx Interconnecting Duct - THC Stock NOx Duct NO Stock SO2 Stock THC Stock CO Record Time (Computer is ON Record Ambient Temperature (TIT-300) Record Ambient Humidity (call Weather Service)	Tank Values 75.6 60.1 75.6 176.4 60.1 399.4 19.0 19.0 19.0 19.0	Recorded Values 75 60 75 126 60 399 19.0	Adjustment (Y/N)

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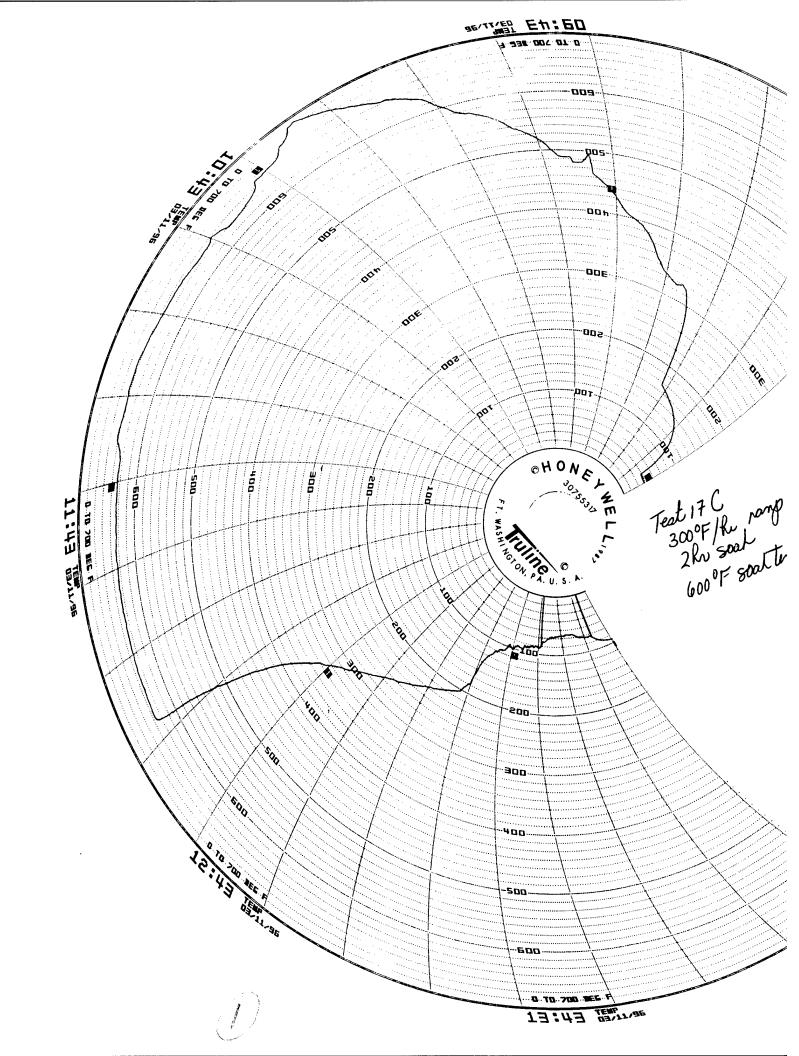
Date: Time:				Sook Temp:		
D ACT	IVITIES					Initial each ite
Load	furnace with Mate	eriials and Ther	mocouples		nn, provide a descri	
#1	Rack A's Characterist	••-			ts, appearance, mois	
	KOCK A's Choractensi	IICR		g- xere: 10 1000ii it	ng procedures for Insti	UCTIONS.
	Initial Wt.(lbs)	Final Wt.(Ibs)		Materials) Initial Wt.(lbs)	Final Wt.(fbs)
	2028		1 00000	CONDICIONO)		
					#4	
			1	£ .	· 	
				000000		
	** Secure nine in	prievent pipes from	n to lin a	Take Pictures		
1						
<u> </u>	Rack B's Characterist	ricis.		152		
	Initial Wt. (lbs)	Final Wt.(lbs)		Materials	Initial Wt.(Ibs)	Final Wt.(lbs)
	1494	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	10000	050000	1	,
			000	00 0000	76	
			100		\mathbf{f}	
				MITT		
•				Take Pictures		
			ry Pipe, SD-Spiked Cir Cont. Clay Pipe, CD-Ci			
			oe less than 3,000 Lbs.			
Mark	Locations of Then	mocouples				
	# YO					
	#7 <u> </u>					Burner
	000	_{	Rack B	· •	Dook A	[
	Doc	" }	RUCK D	•	Rack A	
		PERSONAL PROPERTY.				B al
Poli C	alls and Close Fu	mace Door		l'amb. all mes	personnel are accou	sted for
11	M Dun				son initial this check	-
				•	re furnace door.	•
		le Weigh Shee	•			

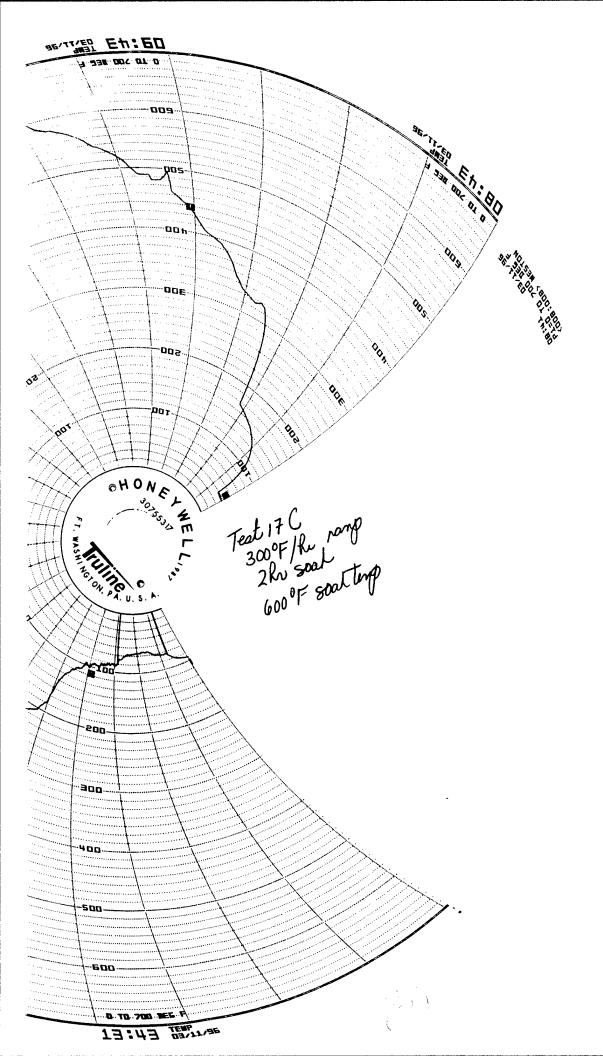
Sook Temp: Sook Temp: Sook Temp: Sook Temp: Sook Temp: Start "N. Adjust flan speed to maintain a system draft < -0.5 in. WC Start "PNAM". Adjust flan speed to maintain < -0.5 in. WC Start "PNADIZER" (Burner). Adjust tan speed to maintain < -0.5 in. WC Once the burner has started, the control system will initiate a purge sequence. The pilot will then attempt so light the burner at low fire. Start "DATALOGGER" Pushbuttons on the Computer. Warm-Up Burner up to 1800 Deg. F. Adjust ton speed to maintain < -0.5 in. WC A 6001: Start "DATALOGGER" Pushbuttons on the Computer. Warm-Up Burner up to 1800 Deg. F. Adjust ton speed to maintain will be released to the operator. The operator must adjust gas flow and ID fan speed to maintain temperature. 1800° Inme 1800° Inme 1800° F and system draft @ < -0.5 in IVC. NACE START-UP Initial and tecord firme for each iter. Set Bleed Ak Dompet to 75%. Turn furnace Key to "BLOWER" Position. Adjust ID tan speed to maintain < -0.5 in. WC Set Controller to "MANUAL". Set controller output to 0.0 Turn Furnace Key to "BLOWER" Position. Verify "INTERLOCK OK" Light is energized. Once the burner started, the control system will initiate a purge sequence. The pilot will then attempt to hight the burner at lon fire. Open Bleed Ak Valve to 100%. Ramp-Up Furnace Temp to Soak Temp. Maintoin Ramp-Up Rafe. System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintoin Ramp-Up Rafe. System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintoin Ramp-Up Rafe. System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintoin Ramp-Up Rafe. System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintoin Ramp-Up Rafe. System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintoin Ramp-Up Rafe. System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintoin Ramp-Up Rafe. System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintoin Ramp-Up Rafe. System Draft and Temp's. Record Furnace Temp to Soak Temp. Maintoin Ramp-Up Rafe. System Draft	(3 of 3)	Rmp-Up 1	
Start "I.D. FAN". Adjust from speed to maintain a system draft < -0.5 in. WC Start "Pre-Mix Alk BLOWER". Adjust from speed to maintain <-0.5 in.WC Start "OXIDIZER" (Surner). Adjust from speed to maintain <-0.5 in.WC Once the burner has started, the control system will imitate a purge sequence. The pilot will then attempt to light the burner at low fire. Start "DATALOGGER" Pushbuttons on the Computer. Warm-Up Burner up to 1800 Deg. F. Adjust tan speed to maintain <-0.5 in.WC \$ 600 f		****	the second section of the second section of the second section is a second section of the second section of the second section is a second section of the section of the second section of the section of the second section of the section of the second section of the sectio
Start "Pre-Mix AIR BLOWER". Adjust tan speed to maintain <-0.5 in.WC Start "OXIDIZER" (Burner). Adjust tan speed to maintain <-0.5 in.WC Once the burner has started, the control system will imitate a purge sequence. The pilot will then attempt so light the burner at low fire. Start "DATALOGGER" Pushbuttons on the Computer. Warm-Up Burner up to 1800 Deg. F. Adjust ion speed to maintain <-0.5 in.WC a 600 F	BURNER START-UF		Initial and record time for each item
Start "OXIDIZER" (Burner). Adjust tan speed to maintain <-0.5 in.WC Once the burner has started, the control system will initiate a purge sequence. The pilot will then attempt so light the burner at low fire. Start "DATALOGGER" Pushbuttons on the Computer. Warm-Up Burner up to 1800 Deg. F. Adjust fan speed to maintain <-0.5 in.WC \$ 400 f	Start "I.D. FAN". Adjus	tion speed to maintain a syste	em draff < -0.5 ln. WC
Once the burner has started, the control system will initiate a purge sequence. The pilot will then attempt to light the burner at low fire. Stort "DATALOGGER" Pushbuttons on the Computer. Warm-Up Burner up to 1800 Deg. f. Adjust tan speed to maintain <-0.5 in.WC 6 000 f	Start "Pre-Mix AIR BLO	WER". Adjust tan speed to ma	rintain <-0.5 In.WC
The pilot will then attempt to light the burner at low fire. Start "DATALOGGER" Pushbuttons on the Computer. Warm-Up Burner up to 1800 Deg. f. Adjust tan speed to maintain <-0.5 In.WC 6 600 f	Start "OXIDIZER" (Burne	er). Adjust fan speed to maint	ain <-0.5 In.WC
Warm-Up Burner up to 1800 Deg. F. Adjust ton speed to maintain <-0.5 In.WC a 600 f. firme a 1200 f. firme a 1	2		purge sequence.
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STOP Computer Datalogger when all thermocouples indicate less than 150 Deg F.	Turn Furnace Key to "		
		LOWER" After lowering Furnac	
	STOP "OXIDIZER" and '		
		'Ail'R BLOWER"	ce Temp to 200 Deg. F.

HOURE	* 0	TAL) C		
Date: _	<u> </u>	MAR	9	6	
There					

Test Number: 17 C
Ramp Up Rate: 300°F/L
Seak Time: 2 LV
Seak Tamp: 600°F

	7	7	
Tag	Description	Unit	09001030 1100 1130 1200 1300
FURNACE	F		Time:
PIT-232	Fuel Gas Prospers	h.WC	889 11.82 12.16 11,41 11.36 11.22 3.33
RT-231	Fuel Gas Flow	CFH	43 141 180 123 122 115 0
PIT-222	Combustion Air Procesure	in. WC	24.97 25.1725.04 24.85 246 223
FIT-221	Combustion Air Flow	CFH	10886 10023 9939 10039 10011 10039 11 933
P1T-158	Chamber Pressure	h.WC	38 222018191852
TIT-201	Recerder Temperature	Dog.F	141 490 650 630 643 632 268
TIT-202	Furnace Exit Gas Temp (Control)	Dag.F	109 377 517 540 562 561 245
TIT-203	Material Thermocouple #1	Dog.F	96 392 644 674 624 611 300
111-204	Material Thermocouple #2	Dag.F	125 436 589 592 602 593 295
T1T-205	Material Thermocouple #3	Deg.F	75 182 425 515 576 594 458
TIT-206	Material Thormocouple #4	Deg.F	141 468 619 613 625 615 271
FIT-207	Material Thermocouple #5	Dog.F	140 521 687 647 660 646 257
AFTERBU	MATERIAL AVG. TEMP ANER		115 420 592 610616 611 331
TIT-131	Combuster Burner Temp. Control	Dag. F	1823 1819 1786 1800 1806 1905 1776
FIT-148	Fumos Flow	CFM	19802021 2010 2010 1987 2021 325
P1T-151	Funce Proceure (Furnece Draft)	MC	-23 . 19 . 19 . 18 . 19 . 17 1. 24
TIT-145	Combuster Temperature	Deg. F	1839 1827 1812 1808 1810 1811 1775
P1T-133	Fuel Pressure	PSIG	.64.46.38.40.32.32.82
TIT-121	Fuel Gas Flow	CFM	8546616446515265301094
CEM	-100 FAN INLET TE	יין און,	1809 356 48° 513 535 536 244
80x-8	Interconnecting Duct NOx	ppm	4.4 9.2 9.8 7.5 7.4 7.0 2.3
TNC-B	Interconnecting Duct THC	ppm	93.4,25.0/5.7 /8.7 /68 /7.9 1.5
c 0	Stack's CO	ppm .	3.0 3.8 3.0 3.8 3.5 3.5 3.5
THC ·	Stack's THC	pp m	8.10.10.10.10.10.0
M Ox	Stanka MOI PUCT NO	ррт	0.8 4.6 6.4 4.1 4.3 4.1 -0.7
\$02	Stack SO2	ppm	1.5 1.5 1.5 1.5 1.5 1.5
12	Stack's 02	*	13.85/2.73/2.17/3.85 13.95/4.85/6.13
c 02	Stacil's CO2	*	7.52 8.22 8.78 7.78 7.206.78 5.63
006-117	Ambient Temp	Deg. F	48 49 49 50
Weether	Relative Humidity	way. F	3237 34 33
Service	ranelite rialiani.		





Pre - START-UP (1 of 3)	Ramp-Up Rale: 300°F/L Soak Time: 2 HR
Time:	Soak Temp: 600°F
MECHANICAL	Initial each item
Inspection doors/manways are SECURED	l'erify all valves, doors, inspection ports, manway, etc
Gas Valves OPEN	have been returned to a position capable of sustaining
View/Inspection Ports CLOSED	system operations.
Record Gas (Propane) Valve Position	
ELECTRICAL	Initial each item.
All Lockout/Tagouts (1-5) are ACCOUNTED.	
Furnace and Afterburner Control Breakers are	ON
Veilly Emergency Pushbuttons are NOT ENGA BUMP Motors and switch to "AUTO"	GED.
Furnace Combustion Blower (M-220)	Terify field selector switches are in "Al TO" after
Afterburner Combustion Blower (M-130)	all motors have been "BUMPED" to verify operations
Afterburner I.D Fon (M-158)	•
Place Afterburner Switch in REMOTE	
Collbrate CEM	Tank Recorded Adjustment (Y/N) Values Values
Intercannecting Duct - NOx	
Interconnecting Duct - THC	The second secon
Stack NOx	
Stack SO2	
Stock THC	
Stack CO	
Slock O2	
Stock CO	
** Verify that all regulators for Calibration Gas Tanks Datalogger/Computer is ON	s are CLOSED
	·
Record Time (Computer Clock)	
Record Ambient Temperature (TT-300) Record Ambient Humidity (call Weather Service)	664-3010 or 945-7000)
Pre - Spike Activities	
Lock-out all Motors: Complete Exclusion Log	
Secure Equipment Pad and Access Road w/ Char	ns .
Spike Test Materials and Furnace Test Plates	

ING/UNLOADING (2		Ramp-Up Rale: Soak Time: Soak Temp:		
Time:				
ACTIVITIES				Initial each item
Load Furnace with Mate	eriials and Thermocouples	For each rack	hin, provide a descri	ption in
u i			nts, appearance, moi	
#/_Rack A's Characterist	ics	ijaa Refer to lood	ing procedures for inst	ructions.
Initial Wt.(los)	Final Wt.(lbs)	<u>Materiats</u>	Initial Wt.(lbs)	Final Wt.(lbs)
		all the Hod was]	
** Secure pipe to ;	prevent pipes from rolling	Take Pictures	***	
Rack B's Characterist	ic:s.			
Initial W1.(lbs)	Final Wf. (tos)	<u>Materials</u>	Initial W1.(Ibs)	Final Wt.(Ibs)
		£.	1	
		Take Pictures	ļ	
** SP-Spiked Sleei Pi	pe. SC-Spiked Clay Pipe. SD-Spik			
	d Steel Plep, CC-Cont. Clay Pipe.			
	theoracks must be less than 3,00			
Mark Locations of Them	mocouples		·	
Door #4	#7 Rack B	¥5	Rack A E	CT
			The state of the s	5 7
Roll Calls and Close Fu	rmace Door	Have each pe	personnel are accou rson initial this checi wre furnace door.	•
		4	. •	
Complete Spike Samp	le Weigh Sheet			
M SEE MEYT PAGE ECO	ALFTERBURNER and FURNAC	E START-UP SECUENCE		

Test Number

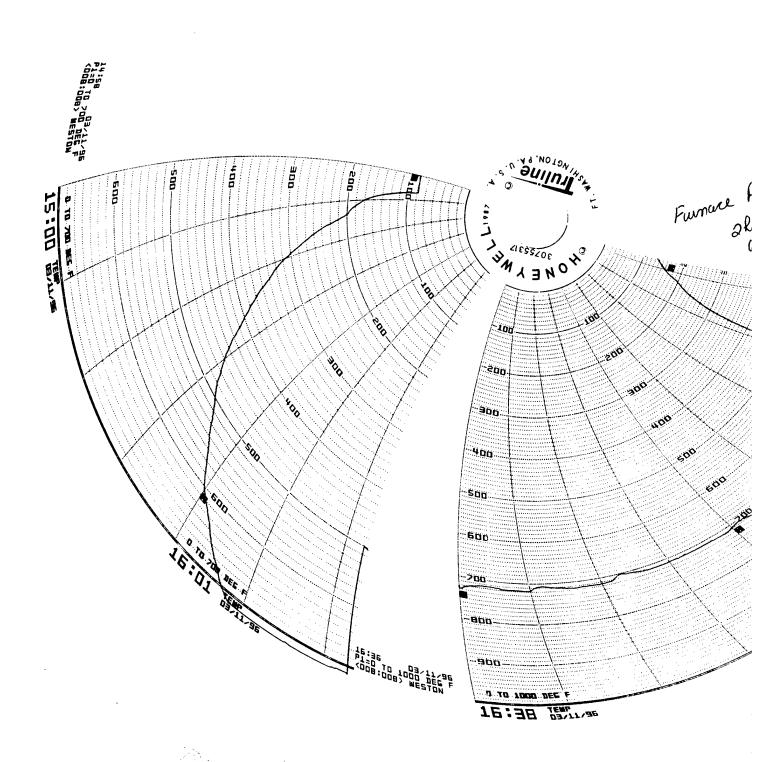
ĮŔ	L-Ñb (3 ot 3)	kmp-Up Time:	
ale: me:		Soak Time: Soak Temp:	
	Start "Pre-Mix AIR BLOW!	on speed to maintain a system drai ER". Adjust tan speed to maintain < . Adjust tan speed to maintain <-0.	C-0.5 In.WC
	Once the burner has starteal, The pilot will then attempt to	the control system will initiate a purge so light the burner at low fire.	equence.
]	Start "DATALOGGER" Pur	shbuttons on the Computer.	
]	Warm-Up Burner up to 13	800 Deg. F. Adjust tan speed to m	aintain <-0.5 in.WC
	€ 600 F: :Time: € 1200 F: :Time: € 1800F: :Time:		er control will be released to the operator. and ID fan speed to maintain temperature ln WC.
RN	ACE START-UP		Initial and record time for each item.
יוחרור		OWER" Position. Adjust ID fan speed Ai". Set controller output to 0.0 RNER" Position.	i to maintain <-0.5 in.WC
_	Once the burner started, the The pilot will then attempt to	control system will initiate a purge seque to light the burner at low fire	ence.
]	Open Bleed Air Valve to Ramp-Up Furnace Temp Record Furnace tempes	o 100% o to Soak Temp. Maintain Ramp-Up ratures during ramp-up hourly, on ti	p Rate, System Draft and Temp's. he control room log sheet.
]	Once the burner is operating ID fan speed to maintain < Manually Log Operating	0.5 In. II C. asterburner temp a. 1800 Deg	sed to the operator. The operator must adjust if, and furnace temp a, SOAK temperature.
	Use the attached Log Sheet . SOAK TIMES and TEMPER	to record all operating parameters at least ATURES will vary from test to test.	st hourly.
		LOG OPERATING PARAMETERS	
ЮL	-DOWN		Initial and record time for each item.
J		OWER" After lowering Furnace Temp	p to 200 Deg. F.
7	STOP "OXIDIZER" and "AI		
J	STOP Computer Datalog	ger when all thermocouples indica	ate less than 150 Deg F.
	** FOLLOW THE FURNACE	E UNLOADING PROCEDURES IN APPI	ENDIX "R" OF HASP.

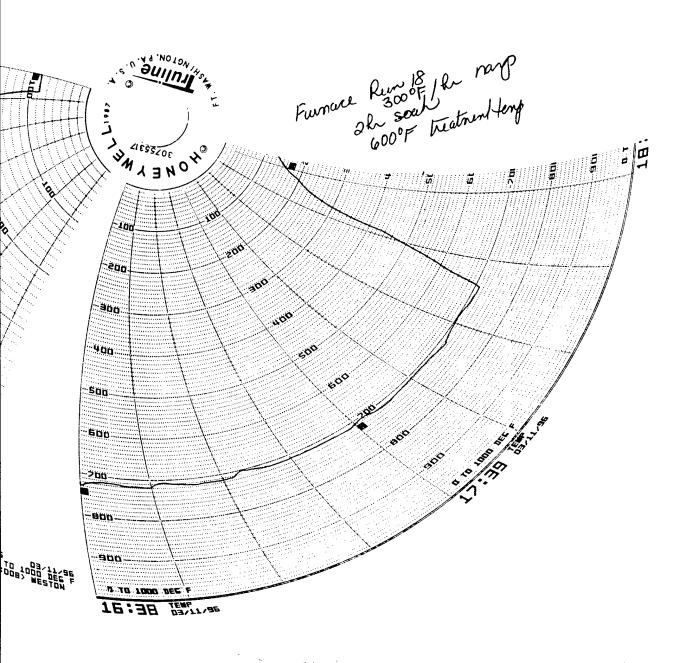
.

HOURI	Y DATA	LO	Gį	
Bata:	MAR	!/	96	
75mar -	1500			

Text Number: FB HOT DECON
Ramp-By Rate: 300°F/L
Seak Time: 2 HPS
Seak Tamp: 600°F

	1	1		1
Tag	Description	Unit	1500 1600 1630 1700 1730 1900	
FURNACE	•		Time:	
P1T-232	Fuel Gan Promure	in.WC	3.56 11.56 11.94 11.73 11.69 11.76	
FIT-231	Fuel Gas Flow	CFH	0 145 170 154 144 142	
PIT-222	Combustion Air Prossure	M.WC	25,06 24,52 24.58 24.61 24.86	
FIT-221	Combustion Air Flow	CFH	11920 19875 19863 19875 19106 19925	
P1T-158	Chamber Pressure	h.WC	-,26-16121110	
T1T-201	Recorder Temperature	Dog.F	85 525 722 718 708 707	
TIT- 20 2	Furnece Exit Gas Temp (Control)	Dag.F	86 492 677 677 668 667	
T1T-203	Material Thermocouple #1	Dog.F	85 489 671 670 664 662	-
TIT-204	Material Thermocouple #2	Dag.F	100 438 614 622 626 632	
TIT-205	Meterial Thermocouple #3	Dog.F	88 471 661 666 661 661	
TIT-200	Meterial Thermocouple #4	Dog.F	91 458 638 645 643 646	
91-207	Material Thermocouple #5 ITERIAL AV9 TEMP	Dag.F	78 568 749 732 715 710 88, 484 664 664 661 662	
MA AFTERBUI			88 484 660 666 661 667	
T1T-131	Combuster Burner Temp. Control	Dog. F	1721 18241824 1806 1812 1809	
FIT-149	Furnes Flow	CFM	2249 2338 2338 2308 2335	
PIT-151	Fumos Procesuro (Furnece Draft)	M WC	.42 .35 .31 .36 .37 .38	
TIT-145	Combuster Temperature	Dog. F	1736 1809 1799 1815 1818 1830	
PIT-133	Fuel Pressure	PSIG	181 .41 .29 .33 .35	<u> </u>
TIT-121	Fuel Gae Flow	CFM	1099 615 478 545 544 478	
CEM 77	TIBO EXIT TEMP		85 464 637 638 641 641	
NOx-B	Interconnecting Duct MOx	ррт	3.0 7.8 8.8 7.4 7.4 7.8	
TNC-D	Interconnecting Duct THC	ррт	1.4 16.9 11.1 12.1 12.5 14.9	
CO	Stack's CO	ppm	3.5 3.5 3.5 3.5 3.5 5.0	
THC	Stack's THC	יים <i>ון</i>	0.0 0.0 0.1 0.0 0.0 0.0	
	Storte NOx DUCT NO	ppm	5 2.8 6.3 5.0 4.9 4.2	
802		рр т	1.5 1.5 1.0 1.0 2.0 2.0	
	Stack's 02	%	1438 1385 1430 1382 1400 1402	
CO2	Stack's CO2	*	6.9 7.24 6.98 7.04 6.90 14.83	
TIT-300	Ambient Temp	Deg. F		
Weather Service	Relative Humidity			
	terestra transmity			





APPENDIX G

SUMMARY OF DATA SHEETS FOR TEST RUNS 1-15

 Date:
 6-Feb-96

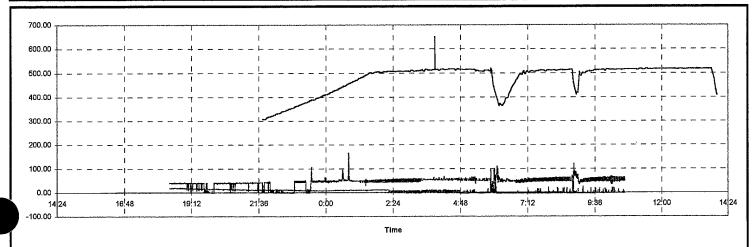
 Time:
 12:28

 Test Number:
 1

 Soak Time:
 12 Hrs

 Soak Temp:
 Greater than 500 F

			16:30	WA	RM:	16:32	16:32	RA	MP.	1:32	1:32	- 50	AE .	13:50	13:50	co	OL .	14:30
Tag	Parameter Description	Unit	Min	Max.	Ave	Stal	Min.	Max	Ave	Sut	Mm.	Max	Ave.	Sid	Min	Max	Ave	SM
FURNACE		targe (The American Property)	310000000000000000000000000000000000000					TE BANK MARK TAL	110-11-1-1-1									
PIT-232	Fuel Gas Pressure	In.WC	-0.11	33.96	3.31	10.77	-0.10	45.13	28.44	10.43	-0.16	68.30	34.46	7.66	-0.23	16.90	1.00	4.12
FIT-231	Fuel Gas Flow	CFH	175.13	201.18	198.27	8.13	166.68	200.93	172.57	5.88	164.58	202.00	169.51	6.13	176.43	201.58	197.66	5.73
PIT-222	Combustion Air Pressure	In.WC	23.82	25.12	23.96	0.41	23.79	25.55	25.23	0.30	23.60	25.45	25.13	0.31	23.26	24.65	23.55	0.30
FIT-221	Combustion Air Flow	CFH	725	1898	847	370	733	2214	1971	257	639	2313	2051	265	602	1711	782	254
PIT-1 58	Chamber Pressure (Draft)	In.WC	-0.38	-0.10	-0.31	0.08	-0.51	-0.10	-0.32	0.03	-0.89	0.00	-0.48	0.06	-1.00	-0.09	-0.41	0.14
TIT-201	Recorder Temperature	Deg.F	36.30	36.68	36.47	0.11	45.30	551.03	323.88	130.86	304.20	570.45	536.58	43.26	183.30	512.85	293.80	89.40
TIT-202	Furnace Exit Gas Temp (Control)	Deg.F	36.45	36.75	36.59	0.12	44.78	554.78	326.58	131.69	302.70	575.48	537.38	44.00	183.30	514.65	293.01	89.69
TIT-203	Material Thermocouple #1	Deg.F	36.23	36.75	36.44	0.15	37.05	510.8	277.62	123.14	372.90	1200.0	511.35	28.82	248.63	507.68	386.05	80.95
TIT-204	Material Thermocouple #2	Deg.F	34.20	34.58	34.39	0.10	36.68	447.98	240.37	104.64	366.00	523.28	470.16	22.72	289.95	488.40	370.62	57.96
TIT-205	Material Thermocouple #3	Deg.F	35.40	35.70	35.54	0.10	40.20	485.78	267.34	115.90	355,88	528.83	502.46	29.19	242.33	493.80	343.92	69.69
TIT-206	Material Thermocouple #4	Deg.F	36.08	36.45	36.20	0.12	40.20	524.40	301.07	129.08	360.68	532.58	518.41	32.49	235.20	520.28	363.77	86.51
111-207	Material Thermocouple #5	Deg.F	35.85	36.23	36.02	0.11	43.73	533.48	300.92	127.23	293.70	560.03	520.21	42,73	181.65	495.00	283.93	83.25
		0 5	1794	1810	1805	5	1145	1850	1809	46	1358	1850	1797	41	1181	1815	1755	99
Masi Masar	Combustor Burner Temp. Control Fumes Flow	Deg. F PPH	2203	2403	2258	73	1145	3376	594	585	48	614	408	55	38	525	381	73
M1-151	Fumes Pressure	InWC	0.50	0.71	0.56	0.07	0.37	0.89	0.63	0.08	-0.06	0.91	0.37	0.07	0.34	2.30	1.05	0,39
771-145	Combustor Temperature	Deg. F	1796	1812	1807	5	1111	1850	1813	49	1341	1850	1804	43	1156	1824	1758	105
MI-133	Fuel Pressure	PSIG	0.77	0.81	0.78	0.01	0.01	0.85	0.56	0.19	0.01	0.86	0.13	0.07	0.00	0.85	0.56	0.31
h-121	Fuel Gas Flow	CFH	1041	1077	1047	11	1	1103	863	144	1	1097	542	90	1	1098	841	303
CEM	1																	
NOx-B	Interconnecting Duct NOx	ppm	0.50	0.53	0.50	0.01	0.48	0.95	0.78	0.11	0.48	1.08	0.90	0.11	0.50	0.68	0.57	0.05
тнс-в	Interconnecting Duct THC	ppm	-1.47	-1.30	-1.37	0.05	-1.54	100.00	14.69	7.63	-3.66	37.52	0.45	4.83	-2.62	46.33	0.49	7.39
со	Stack's CO	ppm	-1.00	-0.50	-0.55	0.16	-1.00	173.00	0.07	8.07	-1.00	319.00	0.27	11.44	-0.50	25.50	0.02	3.06
THC	Stack's THC	ppm	0.26	0.48	0.37	0.07	0.26	58.73	0.88	2.47	-0.10	25.70	0.93	1.20	0.63	30.79	1.67	3.42
NOx	Stack's NOx	ppm	38.90	44.53	42.89	1.55	-0.18	166.03	36.57	17.35	1.75	121.18	53.83	8.63	0.28	104.73	48.18	18.61
SO2	Stack SO2	ppm	-1.00	1.50	0.10	0.77	-5.00	-0.50	-1.89	0.49	-5.50	-0.50	-2.36	1.04	-5.50	-4.50	-5.05	0.30
O2	Stack's O2	96	12.70	12.98	12.79	0.08	10.13	21.20	12.14	0.72	6.95	21.13	12.12	1.01	11.18	21.23	14.22	1.63
CO2	Stack's CO2	96	5.20	5.38	5.34	0.05	0.12	6.90	<i>5.7</i> 0	0.44	0.16	8.94	5.69	0.63	0.10	6.26	4.39	1.01
TIT-300	Ambient Temp	Deg. F					·											



CEM DATA FOR VALIDATION TEST#1, #2, and #3

Stack Testing - Test #1	Duct_NOX	Duct_THC	Stack_CO	Stack_THC	Stack_NOX	Stack_S02	Stack_02	Stack_C02
<i>1/31/96 18:31 Start-Time</i> Min Max	0.65 0.95	7.25 20.19	-1.00 -0.50	0.31 1.2 4	0.03 166.03	-5.00 -0.50	11.23	5.38 6.62
Average Stdev 2/1/96 1:22 End Time	0.82	12.25 3.11	-0.51 0.07	0.73	35.39	-1.77	12.05	5.74
Stack Testing - Test #2	Duct_NOX	Duct_THC	Stack_CO	Stack_THC	Stack_NOX	Stack_S02	Stack_02	Stack_CO2
2/2/96_14:04_Start-Time Min Max	1.03 42.53	37.15 64.23	-1,00 0.00	-0.23 2.34	49.13 98.80	0.00 5.00	10.90	5.36 6.48
Average Stdev 2/2/96 20:43 End Time	1.95	49.23 7.17	-0.47 0.15	0.92	59.62 6.03	2.35	11.87	5.82 0.25
Stack Testing	Duct_NOX	Duct_THC	Stack_CO	Stack_THC	Stack_NOX	Stack_S02	Stack_02	Stack_CO2
2/4/96 14:08 Start-Time Min Max	2.45	4.54 100.00	-0.50 0.50	-5.07 6.49	41 70	1.00	9.73 13.55	5.00 7.48
Average Stdev 2/4/96 20:49 End Time	4.22	77.73	0.15	1.22 5.05	63.32 8.10	1.48	11.86	6.11

 Date:
 7-Feb-96

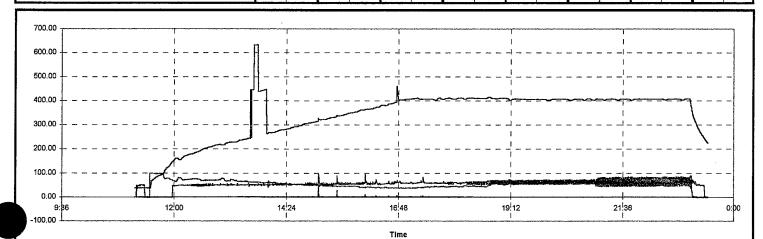
 Time:
 9:00

 Test Number:
 2

 Soak Time:
 6 Hrs

 Soak Temp:
 Greater than 400 F

		- 11	11:09	. WA	RM.	11:29	11:29	RA	MP	16:45	16:45	- 80	AK.	23:03	23:03	cc	or -	23:04
Tag	Parameter Description	Unit	Min	Max	Ave.	594	Min.	Max.	Ave	SA.	Min	Max	die	SM	Min	Max	Ave	State
FURNACE																		
PIT-232	Fuel Gas Pressure	In.WC	-0.16	37.59	1.20	6.84	-0.12	45.64	25.39	5.82	16.43	37.03	28.56	2.83	-0.10	13.81	13.45	3.65
FIT-231	Fuel Gas Flow	CFH	10.50	11.53	10.67	0.16	-0.25	34.03	27.89	6.94	-2.40	12.30	4.51	4.63	-2.38	6.43	6.04	2.26
PiT-222	Combustion Air Pressure	In.WC	23.44	23.56	23.50	0.03	23.44	25.43	25.06	0.25	25.24	25.66	25.48	0.08	24.10	25.29	25.25	0.28
FIT-221	Combustion Air Flow	CFH	12438	12542	12499	17	10475	12458	10751	208	10464	11327	10776	118	11388	12763	11403	329
PIT-158	Chamber Pressure (Draft)	In.WC	-0.75	-0.60	-0.67	0.04	-0.80	0.48	-0.24	0.25	-0.77	-0.20	-0.61	0.18	-1.00	-0.19	-0.33	0.10
TIT-201	Recorder Temperature	Deg.F	39.30	39.98	39.63	0.13	43.80	435.53	300.19	85.79	419.10	450.53	431.33	6.56	176.85	418.73	415.16	64.85
TIT-202	Furnace Exit Gas Temp (Control)	Deg.F	39.60	40.13	39.87	0.13	44.03	438.83	302.41	86.33	421.58	453.68	484.11	6.76	176.40	420.53	416.93	65.07
TIT-203	Material Thermocouple #1	Deg.F	38.25	38.93	38.55	0.17	41.10	397.65	268.98	84.60	396.68	416.25	407.43	3.27	239.55	398.40	395.89	45.96
TIT-204	Material Thermocouple #2	Deg.F	38.85	39.30	39.02	0.10	42.23	392.33	266.17	79.41	392.40	411.08	401.78	2.63	185.40	393.75	389.70	54.38
TIT-205	Material Thermocouple #3	Deg.F	40.05	40.73	40.31	0.13	40.88	1200.00	259.50	181.84	365.55	408.15	400.91	8.49	330.75	406.58	406.05	20.66
TIT-206	Material Thermocouple #4	Deg.F	38.10	38.63	38.31	0.11	40.05	404.70	274.36	85.44	405.38	421.95	412.90	3.48	206.93	404.25	401.40	53.87
TiT-207	Material Thermocouple #5	Deg.F	38.70	39.30	39.02	0.14	42.08	1200.00	333.55	219.14	404.85	745.80	418.39	17.49	167.93	401.70	397.01	59.22
AFTERBUR	2																	
m-131	Combustor Burner Temp. Control	Deg. F	355	1771	1537	296	1,776	1837	1810	8	1784	1835	1810	11	1016	1824	1810	225
3911-149	Fumes Flow	PPH InWC	0.40	0.51	395 0.47	201	0.31	1506 0.74	473	199	-13	1150	452	161	6	2.39	529 0.51	111
РП-151 ПТ-145	Fumes Pressure Combustor Temperature		401	1782	1560	0.02 280	1787	1846	0.45 1817	0.05	0.21 1789	0.65 1846	0.33	0.08	0.42 982	1832	1817	0.24 238
MT-133	Fuel Pressure	Deg. F PSIG	0.83	0.84	0.84	0.00	0.17	0.84	0.44	0.14	0.06	0.23	0.13	0.04	0.00	0.81	0.08	0.30
1-121	Fuel Gas Flow	CFH	1101	1106	1103	0.00	625	1104	781	104	394	685	563	80	0.00	1048	448	382
CEM	FOEL GUS FIOW	CFH	1101	1100	1103		623	1104	/01	104	374	000	503			1040	440	- 302
NOx-B	Interconnecting Duct NOx	ppm	0.93	1.03	0.98	0.03	1.03	42.53	1.98	1.69	0.95	7.50	1.44	0.54	0.05	0.78	0.73	0.14
тнс-в	Interconnecting Duct THC	ppm	-1.21	100.00	4.26	21.96	37.74	100.00	59.94	15.26	37.15	70.60	53.47	7.57	0.39	89.79	82.06	24.26
со	Stack's CO	ppm	-0.50	96.50	2.54	14.02	-0.50	0.00	-0.50	0.01	-1.00	0.00	-0.46	0.18	-0.50	31.00	-0.50	4.90
THC	Stack's THC	ppm	2.64	6.23	3.09	0.54	1.05	2.77	1.99	0.41	-0.23	1.32	0.43	0.29	0.70	26.94	0.73	4.68
NOx	Stack's NOx	ppm	0.00	52.38	26.08	24.75	0.00	78.80	49.18	16.02	43.73	84.23	63.11	9.41	0.83	72.73	59.59	22.20
\$O2	Stack \$02	ppm	3.50	4.50	3.98	0.12	2.50	5.00	4.19	0.58	0.00	3.00	1.75	0.80	2.50	3.50	2.75	0.21
O2	Stack's O2	%	11.68	14.03	12.20	0.29	10.68	12.90	11.79	0.27	10.50	13.80	11.96	0.73	11.20	21.13	11.98	2.94
CO2	Stack's CO2	96	4.54	5.84	5.50	0.17	4.98	7.06	5.74	0.18	4.64	6.76	5.86	0.46	0.12	6.28	5.74	1.86
TIT-300	Ambient Temp	Deg. F	37.76	38.30	37.91	0.12	32.00	38.66	35.15	1.74	32.00	33.26	32.03	0.12	32.00	32.00	32.00	0.00

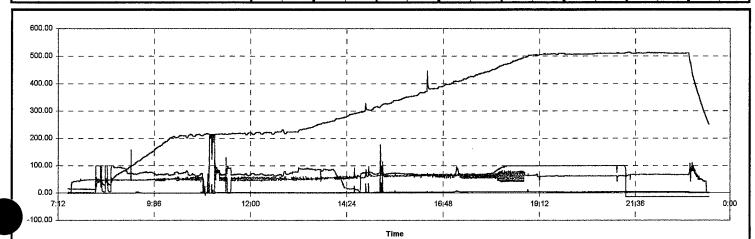


 Date:
 4-Feb-96

 Time:
 7:28

Test Number:	3_
Soak Time:	4 Hrs.
Soak Temp	Greater than 500 F

FURNACE PRI-232 Fuel Gas Pressure In.WC	Tag			<i>7</i> :31	WA	RM-	8:08	8:08	RA	MP	18:55	18:55	- 50	AK .	22:56	22:56	Co	OL	23:22
PIT-232 Fuel Gas Pressure In.WC 0.07 35.02 0.34 2.86 0.08 42.41 24.12 7.89 28.74 38.62 32.92 1.66 -0.05 26.50 2.24 FIT-231 Fuel Gas Flow CFH 35.66 60.08 46.55 7.50 16.05 57.78 30.12 4.55 32.23 34.40 33.16 0.35 10.65 31.38 13.55 PIT-222 Combustion Air Pressure In.WC 25.45 25.91 25.62 0.11 25.40 27.25 26.85 0.28 27.07 27.41 27.21 0.07 25.78 27.26 26.22 FIT-221 Combustion Air Pressure In.WC 25.45 25.91 25.65 0.11 25.40 27.25 26.85 0.28 27.07 27.41 27.21 0.07 25.78 27.26 26.22 FIT-221 Combustion Air Flow CFH 1294 13120 13047 29 10289 13064 10671 453 10261 10641 10407 47 10602 12269 12269 111-201 Recorder Temperature Deg.F 14.25 15.25 14.65 0.16 19.50 547.03 310.88 120.71 531.95 548.33 537.82 3.76 20.16 531.45 30.88 111-202 Furnace Edit Gas Temp (Control) Deg.F 14.55 15.30 14.93 0.15 19.50 547.05 313.47 122.25 536.03 553.85 542.39 43.5 197.55 553.60 318.07 9 111-204 Material Thermocouple #1 Deg.F 13.50 14.63 14.00 0.25 16.20 766.05 291.21 126.55 531.45 544.20 538.47 31.6 305.10 531.90 408.79 111-204 Material Thermocouple #3 Deg.F 17.55 18.85 14.79 70.24 17.55 508.25 308.32 125.56 536.48 553.85 542.9 536.4 31.6 0.00 377.00 0.00 0.00 0.00 0.00 0.00 0.		Parameter Description	Unit	Min	Max	Ave	Sta	Min.	Max.	Ava.	Stal	Min	Max	due	554	Ma	Max	Ave	Stat
PIT-232 Fuel Gas Pressure In.WC 0.07 35.02 0.34 2.86 0.08 42.41 24.12 7.89 28.74 38.62 32.92 1.66 -0.05 26.50 2.24 FIT-231 Fuel Gas Flow CFH 35.66 60.08 46.55 7.50 16.05 57.78 30.12 4.55 32.23 34.40 33.16 0.35 10.65 31.38 13.55 PIT-222 Combustion Air Pressure In.WC 25.45 25.91 25.62 0.11 25.40 27.25 26.85 0.28 27.07 27.41 27.21 0.07 25.78 27.26 26.22 FIT-221 Combustion Air Pressure In.WC 25.45 25.91 25.65 0.11 25.40 27.25 26.85 0.28 27.07 27.41 27.21 0.07 25.78 27.26 26.22 FIT-221 Combustion Air Flow CFH 1294 13120 13047 29 10289 13064 10671 453 10261 10641 10407 47 10602 12269 12269 111-201 Recorder Temperature Deg.F 14.25 15.25 14.65 0.16 19.50 547.03 310.88 120.71 531.95 548.33 537.82 3.76 20.16 531.45 30.88 111-202 Furnace Edit Gas Temp (Control) Deg.F 14.55 15.30 14.93 0.15 19.50 547.05 313.47 122.25 536.03 553.85 542.39 43.5 197.55 553.60 318.07 9 111-204 Material Thermocouple #1 Deg.F 13.50 14.63 14.00 0.25 16.20 766.05 291.21 126.55 531.45 544.20 538.47 31.6 305.10 531.90 408.79 111-204 Material Thermocouple #3 Deg.F 17.55 18.85 14.79 70.24 17.55 508.25 308.32 125.56 536.48 553.85 542.9 536.4 31.6 0.00 377.00 0.00 0.00 0.00 0.00 0.00 0.	FURNACE			30° 20° 10° 10° 10° 10° 10° 10° 10° 10° 10° 1		14 15. Exertis	10,3911034374	4.554.107.50					1200		ACCOUNTS OF				icani Peri
PIT-222 Combustion Air Pressure In.WC 25.45 25.91 25.42 0.11 25.40 27.25 26.85 0.22 27.07 27.41 27.21 0.07 25.78 27.24 26.22 27.07 27.41 27.21 0.07 25.78 27.24 26.22 27.07 27.41 27.21 0.07 25.78 27.24 26.22 27.07 27.41 27.21 0.07 25.78 27.24 26.22 27.07 27.41 27.21 0.07 25.78 27.24 26.22 27.07 27.41 27.21 0.07 25.78 27.24 26.22 27.07 27.41 27.21 0.07 25.78 27.24 26.22 27.07 27.41 27.21 0.07 25.78 27.24 27.21 27.21 0.07 25.78 27.24 27.21 27.21 0.07 25.78 27.24 27.21 27.21 0.07 25.78 27.24 27.21 27.2			In.WC	0.07	35.02	0.34	2.86	0.08	42.41	24.12	7.89	28.74	38.62	32.92	1.66	-0.05	26.90	2.24	6.32
FIT-221 Combustion Air Flow CFH 1294 13120 13047 29 10289 13064 10677 43 10261 10541 10407 47 10402 12289 12037 PIT-188 Chamber Pressure (broth) In.WC -0.53 -0.33 -0.50 0.03 -0.79 -0.19 -0.45 0.09 -0.45 -0.32 -0.57 0.06 -0.45 -0.17 0.35 117-201 Recorder Temperature Deg.F 14.25 15.23 14.65 0.16 19.50 542.03 310.88 120.71 531.86 548.33 537.82 3.76 201.08 531.45 320.88 13 117-202 Furnace Exit Gas Temp (Control) Deg.F 14.55 15.30 14.93 0.15 19.50 547.65 313.47 122.25 536.03 553.65 542.39 4.35 197.55 558.80 318.07 117-203 Material Thermocouple #1 Deg.F 13.50 14.63 14.00 0.25 16.20 756.08 291.21 126.53 531.00 544.20 536.47 3.16 305.10 531.90 408.79 0.17 117-204 Material Thermocouple #3 Deg.F 15.00 15.90 15.36 0.19 16.73 492.75 274.33 113.57 493.35 510.98 506.14 2.44 284.10 506.03 377.00 0.17 117-204 Material Thermocouple #3 Deg.F 17.55 18.45 17.79 0.25 17.85 420.00 223.62 99.59 421.13 475.73 457.42 15.14 400.80 475.88 442.20 1.17 117-204 Material Thermocouple #3 Deg.F 13.88 14.55 14.17 0.14 19.43 552.08 308.32 125.56 536.48 553.86 553.86 543.44 4.62 191.25 535.43 318.46 1.17 117-207 Material Thermocouple #4 Deg.F 13.88 14.55 14.17 0.14 19.43 552.08 308.32 125.56 536.48 553.86 553.86 46.20 191.25 535.43 318.46 1.17 117-207 Material Thermocouple #4 Deg.F 13.88 14.55 14.17 0.14 19.43 552.08 308.32 125.56 536.48 553.86 553.86 88 261 395 336.4 1.17 117-207 Material Thermocouple #4 Deg.F 13.88 14.55 14.17 0.14 19.43 552.08 308.32 125.56 536.48 553.86 553.86 543.44 4.62 191.25 535.43 318.46 1.17 117-207 Material Thermocouple #4 Deg.F 13.88 14.55 14.17 0.14 19.43 552.08 308.32 125.56 536.48 553.86 553.86 543.44 4.62 191.25 535.43 318.46 1.17 117-207 Material Thermocouple #4 Deg.F 13.88 14.55 14.17 0.14 19.43 552.08 308.32 125.56 536.48 553.86 543.44 4.62 191.25 535.43 318.46 1.17 117-207 Material Thermocouple #4 Deg.F 13.88 14.55 14.17 0.14 19.43 552.08 308.32 125.56 536.48 553.86 543.44 4.62 191.25 535.43 318.46 1.17 117-207 14.17 117-207 14.17 117-207 14.17 117-207 14.25 14.25 14.25 14.25 14.25 14.25 14.25 14.25 14.25 14.2	FIT-231	Fuel Gas Flow	CFH	35.65	60.08	46.55	7.50	15.05	57.78	30.12	4.55	32.23	34.40	33.16	0.35	10.85	31.38	13.53	5.61
PIT-188 Chamber Pressure (Droft)	PIT-222	Combustion Air Pressure	In.WC	25.45	25.91	25.62	0.11	25.40	27.25	26.85	0.28	27.07	27.41	27.21	0.07	25.98	27.26	26.22	0,35
TIT-201 Recorder Temperature Deg.F 14.25 15.23 14.65 0.16 19.50 542.03 310.88 120.71 531.98 548.33 537.82 3.96 201.08 531.45 320.88 511.70 prince Exit Gas Temp (Control) Deg.F 14.55 15.30 14.93 0.15 19.50 547.65 313.47 122.25 536.03 553.65 542.39 4.35 197.55 535.80 318.07 511.70 Material Thermocouple #1 Deg.F 13.50 15.90 1	FIT-221	Combustion Air Flow	CFH	12964	13120	13047	29	10259	13064	10671	453	10261	10541	10407	47	10602	12269	12037	447
TIT-202 Furnace Exit Gas Temp (Control) Deg.F 14.55 15.30 14.93 0.15 19.50 547.65 313.47 122.25 536.00 553.65 542.39 4.35 197.55 535.80 318.07 9 III-203 Material Thermocouple #1 Deg.F 13.50 14.63 14.00 0.25 16.20 756.08 291.21 126.53 831.60 534.67 3.16 305.10 531.90 408.79	PIT-158	Chamber Pressure (Draft)	In.WC	-0.53	-0.33	-0.50	0.03	-0.99	-0.19	-0.45	0.09	-0.65	-0.32	-0.57	0.06	-0.65	-0.17	-0.35	0.13
III-203 Material Thermocouple #1 Deg.F 13.50 14.63 14.00 0.25 16.20 756.08 291.21 126.53 531.60 544.20 536.67 3.16 305.10 531.90 408.79 <	ri r-2 01	Recorder Temperature	Deg.F	14.25	15.23	14.65	0.16	19.50	542.03	310.88	120.71	531.98	548.33	537.82	3.96	201.08	531.45	320.88	94.74
III-204 Material Thermocouple #2 Deg.F 15.00 15.90 15.36 0.19 16.73 492.75 274.33 113.57 493.35 510.98 506.14 2.84 284.10 506.03 377.00 6 III-205 Material Thermocouple #8 Deg.F 17.55 18.45 17.97 0.25 17.85 420.60 223.62 99.59 421.13 475.73 457.42 15.14 400.80 475.88 442.20 2 III-206 Material Thermocouple #4 Deg.F 13.28 14.55 13.77 0.24 17.55 500.85 272.72 115.16 501.45 511.50 507.76 2.16 220.00 507.53 354.61 8 III-207 Material Thermocouple #5 Deg.F 13.81 14.55 14.17 0.14 19.43 552.08 308.32 125.56 536.48 555.38 543.54 4.62 191.25 535.43 318.40 220.00 19.00 19.00 1769 1883 1809 1815<	fi f-20 2	Furnace Exit Gas Temp (Control)	Deg.F	14.55	15.30	14.93	0.15	19.50	547.65	313.47	122.25	534.03	553.65	542.39	4.35	197.55	535.80	318.07	96.88
Tit-205 Material Thermocouple #8 Deg.F 17.55 18.45 17.97 0.25 17.85 420.60 223.62 99.59 421.13 475.73 457.42 15.14 400.80 475.88 442.20 2 Tit-206 Material Thermocouple #4 Deg.F 13.28 14.55 13.77 0.24 17.55 500.85 272.72 115.16 601.45 511.50 507.78 2.16 220.80 507.53 354.61 8 Tit-207 Material Thermocouple #5 Deg.F 13.88 14.55 14.17 0.14 19.43 552.08 308.32 125.56 536.48 555.36 543.54 4.62 191.25 535.43 318.46 5 461.2 Interval 475.88 18.10 1.2 1756 1850 1800 191.25 535.43 318.46 5 461.2 Interval 475.88 14.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 <t< th=""><th>TIT-203</th><th>Material Thermocouple #1</th><th>Deg.F</th><th>13.50</th><th>14.63</th><th>14.00</th><th>0.25</th><th>16.20</th><th>756.08</th><th>291.21</th><th>126.53</th><th>531.60</th><th>544.20</th><th>536.67</th><th>3.16</th><th>305.10</th><th>531.90</th><th>408.79</th><th>60.07</th></t<>	TIT-203	Material Thermocouple #1	Deg.F	13.50	14.63	14.00	0.25	16.20	756.08	291.21	126.53	531.60	544.20	536.67	3.16	305.10	531.90	408.79	60.07
TIT-206 Material Thermocouple #4 Deg.F 13.28 14.55 13.77 0.24 17.55 500.85 272.72 115.16 801.45 511.50 507.78 2.16 220.80 507.53 354.61 8 111-207 Material Thermocouple #5 Deg.F 13.88 14.55 14.17 0.14 19.43 552.08 308.32 125.56 536.48 855.38 543.54 4.62 191.25 535.43 318.46 5	rit-204	Material Thermocouple #2	Deg.F	15.00	15.90	15.36	0.19	16.73	492.75	274.33	113.57	493.35	510.78	506.14	2.84	284.10	506.03	377.00	64.27
IIIT-207 Material Thermocouple #5 Deg.F 13.88 14.55 14.17 0.14 19.43 552.08 308.32 125.56 536.48 555.38 543.54 4.62 191.25 535.43 318.46 5 Aff_1_3_UNLES Combustor Burner Temp. Control Deg. F 13 1759 1539 369 1747 1850 1810 12 1756 1880 1800 19 1769 1833 1807 1807 1800 19 1769 1833 1807 1800 1810 12 1756 1880 1800 19 1769 1833 1807 1800 1810 12 1756 1880 1800 19 1769 1833 1807 1800 1810 12 1756 1880 1800 19 1769 1833 1807 1800 1810 12 1756 1880 1800 19 1769 1833 1807 1800 1800 1800 1800 1800 1800	IIT-205	Material Thermocouple #3	Deg.F	17.55	18.45	17.97	0.25	17.85	420.60	223.62	99.59	421.13	475.73	457.42	15.14	400.80	475.88	442.20	23.18
AFISIONNES TIT-131 Combustor Burner Temp. Control Deg. F 13 1759 1539 369 1749 1850 1810 12 1756 1850 1800 19 1769 1833 1807 Furnes Flow PPH 0 956 345 220 -18 1222 425 213 19 839 386 88 261 395 356 FIT-151 Furnes Pressure InWC 0.43 0.60 0.46 0.02 0.26 0.77 0.41 0.06 0.20 0.51 0.23 0.02 0.21 1.48 0.83 TIT-145 Combustor Temperature Deg. F 14 1765 1552 364 1753 1850 1815 13 1760 1850 1807 19 1771 1842 1812 Fuel Pressure PSIG 0.02 0.88 0.86 0.11 0.05 0.89 0.37 0.22 0.05 0.09 0.08 0.00 0.05 0.90 0.51 T-121 Fuel Gas Flow CFH 1 1089 1074 108 352 1090 729 154 368 502 460 11 350 1080 804 CEM NOX-B Interconnecting Duct NOX ppm -0.05 0.03 -0.02 0.01 -0.15 215.25 5.23 22.67 3.48 12.33 4.20 0.32 1.75 4.35 2.02 THC-B Interconnecting Duct THC ppm 1.25 2.37 1.78 0.17 -8.41 100.00 69.93 20.48 -14.31 100.00 55.21 55.73 -14.26 -14.18 -14.23	IIT-206	Material Thermocouple #4	Deg.F	13.28	14.55	13.77	0.24	17.55	500.85	272.72	115.16	501.45	511.50	507.78	2.16	220.80	507.53	354.61	88.50
TIT-131: Combustor Burner Temp. Control Deg. F 13 1759 1539 369 1749 1850 1810 12 1756 1850 1800 19 1769 1833 1807 File 147 Furnes Flow PPH 0 956 345 220 -18 1222 425 213 19 839 386 88 261 395 356 FIT-151: Furnes Pressure InWC 0.43 0.60 0.46 0.02 0.26 0.77 0.41 0.06 0.20 0.51 0.23 0.02 0.21 1.48 0.83 TIT-145 Combustor Temperature Deg. F 14 1765 1552 364 1753 1850 1815 13 1760 1850 1807 19 1771 1842 1812 FIT-138 Fuel Pressure PSIG 0.02 0.88 0.86 0.11 0.05 0.89 0.37 0.22 0.05 0.09 0.08 0.00 0.05 0.90 0.51 Fuel Gas Flow CFH 1 1089 1074 108 352 1090 729 154 368 502 460 11 350 1080 804 CEM NOX-B Interconnecting Duct NOX ppm -0.05 0.03 -0.02 0.01 -0.15 215.25 5.23 22.69 8.48 12.33 4.20 0.32 1.75 4.35 2.02 THC-B Interconnecting Duct THC ppm 1.25 2.37 1.78 0.17 -8.41 100.00 69.93 20.48 -14.31 100.00 55.21 55.73 -14.26 -14.18 -14.23	IIT-207		Deg.F	13.88	14.55	14.17	0.14	19.43	552.08	308.32	125.56	536.48	555,38	543.54	4.62	191.25	535.43	318.46	95.42
Fumes Flow PPH 0 956 345 220 -18 1222 425 213 19 839 386 88 261 395 356 FII-151) Fumes Pressure InWC 0.43 0.60 0.46 0.02 0.26 0.77 0.41 0.06 0.20 0.51 0.23 0.02 0.21 1.48 0.83 III-145 Combustor Temperature Deg. F 14 1765 1552 364 1753 1850 1815 13 1760 1850 1807 19 1771 1842 1812 Fuel Pressure PSIG 0.02 0.88 0.86 0.11 0.05 0.89 0.37 0.22 0.05 0.09 0.08 0.00 0.05 0.90 0.51 Fuel Gas Flow CFH 1 1089 1074 108 352 1090 729 154 368 502 460 11 350 1080 804 CEM NOX-B Interconnecting Duct NOX ppm -0.05 0.03 -0.02 0.01 -0.15 215.25 5.23 22.69 3.48 12.33 4.20 0.32 1.75 4.35 2.02 THC-B Interconnecting Duct THC ppm 1.25 2.37 1.78 0.17 -8.41 100.00 69.93 20.48 -14.31 100.00 \$55.21 55.73 -14.26 -14.18 1.4.23	afierburi														*		· · · · ·	F. 5. T	
Furnes Pressure InWC 0.43 0.60 0.46 0.02 0.26 0.77 0.41 0.06 0.20 0.51 0.23 0.02 0.21 1.48 0.83 III-145 Combustor Temperature Deg. F 14 1765 1552 364 1753 1850 1815 13 1760 1850 1807 19 1771 1842 1812 Fuel Pressure PS/G 0.02 0.88 0.86 0.11 0.05 0.89 0.37 0.22 0.05 0.09 0.08 0.00 0.05 0.90 0.51 Fuel Gas Flow CFH 1 1089 1074 108 352 1090 729 154 368 502 460 11 350 1080 804 CEM NOX-B Interconnecting Duct NOX ppm -0.05 0.03 -0.02 0.01 -0.15 215.25 5.23 22.69 8.48 12.33 4.20 0.32 1.75 4.35 2.02 IHC-B Interconnecting Duct THC ppm 1.25 2.37 1.78 0.17 -8.41 100.00 69.93 20.48 -14.31 100.00 55.21 55.73 -14.26 -14.18 -14.23	M-131	Combustor Burner Temp. Control	Deg. F	13	1759	1539	369	1749	1850	1810	12	1756	1850	1800	19	1769	1833	1807	15
TIT-145 Combustor Temperature Deg. F 14 1765 1552 364 1753 1850 1815 13 1760 1850 1807 19 1771 1842 1812 TT-135 Fuel Pressure PSIG 0.02 0.88 0.86 0.11 0.05 0.89 0.37 0.22 0.05 0.09 0.08 0.00 0.05 0.90 0.51 T-136 Fuel Gas Flow CFH 1 1089 1074 108 352 1090 729 154 368 502 460 11 350 1080 804 CEM NOX-B Interconnecting Duct NOX ppm -0.05 0.03 -0.02 0.01 -0.15 215.25 5.23 22.69 3.48 12.33 4.20 0.32 1.75 4.35 2.02 THC-B Interconnecting Duct THC ppm 1.25 2.37 1.78 0.17 -8.41 100.00 69.93 20.48 -14.31 100.00 55.21 55.73 -14.26 -14.18 -14.23	HT-149	Fumes Flow	DDU .																
Fuel Pressure PSIG 0.02 0.88 0.86 0.11 0.05 0.89 0.37 0.22 0.05 0.09 0.08 0.00 0.05 0.90 0.51 Fuel Gas Flow CFH 1 1089 1074 108 352 1090 729 154 368 502 460 11 350 1080 804 CEM NOx-B Interconnecting Duct NOx ppm -0.05 0.03 -0.02 0.01 -0.15 215.25 5.23 22.69 3.48 12.33 4.20 0.32 1.75 4.35 2.02 THC-B Interconnecting Duct THC ppm 1.25 2.37 1.78 0.17 -8.41 100.00 69.93 20.48 -14.31 100.00 \$55.21 55.73 -14.26 -14.18 1.4.23			''''	0	956	345	220	-18	1222	425	213	19	839	386	88	261	395	356	20
Fuel Gas Flow CFH 1 1089 1074 108 352 1090 729 154 368 502 460 11 350 1080 804 CEM NOx-B Interconnecting Duct NOx ppm -0.05 0.03 -0.02 0.01 -0.15 215.25 5.23 22.69 8.48 12.33 4.20 0.32 1.75 4.35 2.02 THC-B Interconnecting Duct THC ppm 1.25 2.37 1.78 0.17 -8.41 100.00 69.93 20.48 -14.31 100.00 55.21 55.73 -14.26 -14.18 -14.23	M-151	Fumes Pressure					-												20 0.41
CEM NOx-B Interconnecting Duct NOx ppm -0.05 0.03 -0.02 0.01 -0.15 215.25 5.23 22.69 8.48 12.33 4.20 0.32 1.75 4.35 2.02 THC-B Interconnecting Duct THC ppm 1.25 2.37 1.78 0.17 -8.41 100.00 69.93 20.48 -14.31 100.00 55.21 55.73 -14.26 -14.18 -14.23			InWC	0.43	0.60	0.46	0.02	0.26	0.77	0.41	0.06	0.20	0.51	0.23	0.02	0.21	1.48	0.83	
NOx-B Interconnecting Duct NOx ppm -0.05 0.03 -0.02 0.01 -0.15 215.25 5.23 22.69 8.48 12.33 4.20 0.32 1.75 4.35 2.02 THC-B Interconnecting Duct THC ppm 1.25 2.37 1.78 0.17 -8.41 100.00 69.93 20.48 -14.31 100.00 55.21 55.73 -14.26 -14.18 -14.23	IIT-145	Combustor Temperature	InWC Deg. F	0.43	0.60 1765	0.46 1552	0.02 364	0.26 1753	0.77	0.41 1815	0.06	0.20 1760	0.51 1850	0.23 1807	0.02	0.21	1.48 1842	0.83 1812	0.41
THC-B Interconnecting Duct THC ppm 1.25 2.37 1.78 0.17 -8.41 100.00 69.93 20.48 -14.31 100.00 \$5.21 55.73 -14.26 -14.18 -14.23	III-145 71-138 14-121	Combustor Temperature Fuel Pressure	InWC Deg. F PSIG	0.43	0.60 1765 0.88	0.46 1552 0.86	0.02 364 0.11	0.26 1753 0.05	0.77 1850 0.89	0.41 1815 0.37	0.06 13 0.22	0.20 1760 0.05	0.51 1850 0.09	0.23 1807 0.08	0.02 19 0.00	0.21 1771 0.05	1.48 1842 0.90	0.83 1812 0.51	0.41
	III-145 27-136 24-121 CEM	Combustor Temperature Fuel Pressure Fuel Gas Flow	InWC Deg. F PSIG CFH	0.43 14 0.02	0.60 1765 0.88 1089	0.46 1552 0.86 1074	0.02 364 0.11 108	0.26 1753 0.05 352	0.77 1850 0.89 1090	0.41 1815 0.37 729	0.06 13 0.22 154	0.20 1760 0.05 368	0.51 1850 0.09 502	0.23 1807 0.08 460	0.02 19 0.00	0.21 1771 0.05 350	1.48 1842 0.90 1080	0.83 1812 0.51 804	0.41 17 0.32 221
	TF-145 TF-138 TF-138 TF-123 CEM NOx-B	Combustor Temperature Fuel Pressure Fuel Gas Flow Interconnecting Duct NOx	inWC Deg. F PSIG CFH ppm	0.43 14 0.02 1	0.60 1765 0.88 1089	0.46 1552 0.86 1074	0.02 364 0.11 108	0.26 1753 0.05 352	0.77 1850 0.89 1090	0.41 1815 0.37 729	0.06 13 0.22 154 22.67	0.20 1760 0.05 368	0.51 1850 0.09 502	0.23 1807 0.08 460	0.02 19 0.00 11	0.21 1771 0.05 350	1.48 1842 0.90 1080	0.83 1812 0.51 804	0.41 17 0.32 221
	TT-145 TT-138 E-123 CEM NOx-B	Combustor Temperature Fuel Pressure Fuel Gas Flow Interconnecting Duct NOx Interconnecting Duct THC	InWC Deg. F PSIG CFH ppm ppm	0.43 14 0.02 1 -0.05 1.25	0.60 1765 0.88 1089 0.03	0.46 1552 0.86 1074 -0.02	0.02 364 0.11 108 0.01 0.17	0.26 1753 0.05 352 -0.15 -8.41	0.77 1850 0.89 1090 215.25 100.00	0.41 1815 0.37 729 5.23	0.06 13 0.22 154 22.69 20.48	0.20 1760 0.05 368 3.48	0.51 1850 0.09 502 12.33	0.23 1807 0.08 460 4.20 55.21	0.02 19 0.00 11 0.32 55.73	0.21 1771 0.05 350 1.75	1.48 1842 0.90 1080 4.35	0.83 1812 0.51 804 2.02	0.41 17 0.32 221 0.51
	TT-145 TT-138. CEM NOx-B THC-B	Combustor Temperature Fuel Pressure Fuel Gas Flow Interconnecting Duct NOx Interconnecting Duct THC Stack's CO	InWC Deg. F PSIG CFH ppm ppm	0.43 14 0.02 1 -0.05 1.25 -0.50	0.60 1765 0.88 1089 0.03 2.37 96.50	0.46 1552 0.86 1074 -0.02 1.78 2.45	0.02 364 0.11 108 0.01 0.17	0.26 1753 0.05 352 -0.15 -8.41 -1.00	0.77 1850 0.89 1090 215.25 100.00 487.50	0.41 1815 0.37 729 5.23 69.93	0.06 13 0.22 154 22.69 20.48 40.52	0.20 1760 0.05 368 3.48 -14.31	0.51 1850 0.09 502 12.33 100.00	0.23 1807 0.08 460 4.20 55.21	0.02 19 0.00 11 0.32 55.73	0.21 1771 0.05 350 1.75 -14.26	1.48 1842 0.90 1080 4.35 -14.18	0.83 1812 0.51 804 2.02 -14.23	0.41 17 0.32 221 0.51 0.02
	117-145 277-135 277-135 CEM NOX-B CHC-B	Combustor Temperature Fuel Pressure Fuel Gas Flow Interconnecting Duct NOx Interconnecting Duct THC Stack's CO Stack's THC	InWC Deg. F PSIG CFH ppm ppm ppm	0.43 14 0.02 1 -0.05 1.25 -0.50	0.60 1765 0.88 1089 0.03 2.37 96.50 56.39	0.46 1552 0.86 1074 -0.02 1.78 2.45	0.02 364 0.11 108 0.01 0.17 11.06 5.63	0.26 1753 0.05 352 -0.15 -8.41 -1.00	0.77 1850 0.89 1090 215.25 100.00 487.50 97.53	0.41 1815 0.37 729 5.23 69.93 4.02 3.27	0.06 13 0.22 154 22.69 20.48 40.52 8.63	0.20 1760 0.05 368 3.48 -14.31 -0.50 -4.69	0.51 1850 0.09 502 12.33 100.00 0.50	0.23 1807 0.08 460 4.20 55.21 0.35 -4.50	0.02 19 0.00 11 0.32 55.73 0.23	0.21 1771 0.05 350 1.75 -14.26 0.00	1.48 1842 0.90 1080 4.35 -14.18 0.50	0.83 1812 0.51 804 2.02 -14.23 0.34 -4.51	0.41 17 0.32 221 0.51 0.02 0.23
	TIT-145 TT-135 T-123 CEM NOX-B THC-B CO THC	Combustor Temperature Fuel Pressure Fuel Gas Flow Interconnecting Duct NOx Interconnecting Duct THC Stack's CO Stack's THC Stack's NOx	InWC Deg. F PSIG CFH ppm ppm ppm ppm	0.43 14 0.02 1 -0.05 1.25 -0.50 1.18 0.33	0.60 1765 0.88 1089 0.03 2.37 96.50 56.39	0.46 1552 0.86 1074 -0.02 1.78 2.45 2.47 45.46	0.02 364 0.11 108 0.01 0.17 11.06 5.63 7.73	0.26 1753 0.05 352 -0.15 -8.41 -1.00 -5.07	0.77 1850 0.89 1090 215.25 100.00 487.50 97.53 207.93	0.41 1815 0.37 729 5.23 69.93 4.02 3.27 58.25	0.06 13 0.22 154 22.69 20.48 40.52 8.63 20.80	0.20 1760 0.05 368 3.48 -14.31 -0.50 -4.69	0.51 1850 0.09 502 12.33 100.00 0.50 -4.21 71.50	0.23 1807 0.08 460 4.20 \$5.21 0.35 -4.50	0.02 19 0.00 11 0,32 55.73 0.23 0.07	0.21 1771 0.05 350 1.75 -14.26 0.00 -4.66	1.48 1842 0.90 1080 4.35 -14.18 0.50 -4.35	0.83 1812 0.51 804 2.02 -14.23 0.34 -4.51	0.41 17 0.32 221 0.51 0.02 0.23 0.07
	TIT-145 PT-136 CEM NOx-B HC-B CO HC-B	Combustor Temperature Fuel Pressure Fuel Gas Flow Interconnecting Duct NOx Interconnecting Duct THC Stack's CO Stack's THC Stack's NOx Stack SO2	InWC Deg. F PSIG CFH ppm ppm ppm ppm ppm	0.43 14 0.02 1 -0.05 1.25 -0.50 1.18 0.33 5.00	0.60 1765 0.88 1089 0.03 2.37 96.50 56.39 51.40 6.50	0.46 1552 0.86 1074 -0.02 1.78 2.45 2.47 45.46 6.11	0.02 364 0.11 108 0.01 0.17 11.06 5.63 7.73 0.25	0.26 1753 0.05 352 -0.15 -8.41 -1.00 -5.07 -0.20 -1.50	0.77 1850 0.89 1090 215.25 100.00 487.50 97.53 207.93	0.41 1815 0.37 729 5.23 69.93 4.02 3.27 58.25 8.43	0.06 13 0.22 154 22.69 20.48 40.52 8.63 20.80 46.16	0.20 1760 0.05 368 3.48 -14.31 -0.50 -4.69 43.65	0.51 1850 0.09 502 12.33 100.00 0.50 -4.21 71.50	0.23 1807 0.08 460 4.20 55.21 0.35 -4.50 64.71 0.84	0.02 19 0.00 11 0.32 55.73 0.23 0.07 2.82 0.69	0.21 1771 0.05 350 1.75 -14.26 0.00 -4.66 42.25	1.48 1842 0.90 1080 4.35 -14.18 0.50 -4.35 110.23	0.83 1812 0.51 804 2.02 -14.23 0.34 -4.51 65.45	0.41 17 0.32 221 0.51 0.02 0.23 0.07 19.14
TIT-300 Amblent Temp Deg. F 32.00 32.00 32.00 0.00 32.00	TIT-145 PT-138 PE-123 CEM NOX-B CHC-B CO CHC NOX SO2 CO2	Combustor Temperature Fuel Pressure Fuel Gas Flow Interconnecting Duct NOx Interconnecting Duct THC Stack's CO Stack's THC Stack's NOx Stack's NOx Stack's O2	InWC Deg. F PSIG CFH ppm ppm ppm ppm ppm ppm	0.43 14 0.02 1 -0.05 1.25 -0.50 1.18 0.33 5.00	0.60 1765 0.88 1089 0.03 2.37 96.50 56.39 51.40 6.50 21.63	0.46 1552 0.86 1074 -0.02 1.78 2.45 2.47 45.46 6.11	0.02 364 0.11 108 0.01 0.17 11.06 5.63 7.73 0.25 1.38	0.26 1753 0.05 352 -0.15 -8.41 -1.00 -5.07 -0.20 -1.50 0.08	0.77 1850 0.89 1090 215.25 100.00 487.50 97.53 207.93 453.50 22.70	0.41 1815 0.37 729 5.23 69.93 4.02 3.27 58.25 8.43 11.91	0.06 13 0.22 154 20.48 40.52 8.63 20.80 46.16	0.20 1760 0.05 368 3.48 -14.31 -0.50 -4.69 43.65 -1.00	0.51 1850 0.09 502 12.33 100.00 0.50 -4.21 71.50 2.00	0.23 1807 0.08 460 4.20 \$5.21 0.35 -4.50 64.71 0.84	0.02 19 0.00 11 0.32 55.73 0.23 0.07 2.62 0.69	0.21 1771 0.05 350 1.75 -14.26 0.00 -4.66 42.25 -0.50	1.48 1842 0.90 1080 4.35 -14.18 0.50 -4.35 110.23 0.50 15.23	0.83 1812 0.51 804 2.02 -14.23 0.34 -4.51 65.45 -0.11	0.41 17 0.32 221 0.51 0.02 0.23 0.07



 Date:
 6-Feb-96

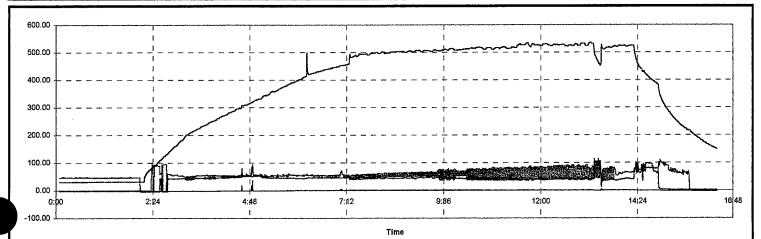
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 2:17

 Test Number:
 4

 Soak Time:
 6 Hrs

 Soak Temp:
 Greater than 500 F

			21:01	WA	RM	2:11	2:11	RA.	MP	8:03	8:03	so	AK	14:19	14:19	co	OL	16:22
Tag	Parameter Description	Unit	Min.	Мах.	Ave.	Std.	Min.	Max.	Ave.	Std.	Min.	Мах.	Ave.	Std.	Min.	Мах.	Ave.	Std.
FURNACE																		
PiT-232	Fuel Gas Pressure	In.WC	3.57	3.84	3.70	0.02	6.81	12.22	10.71	0.89	7.97	12.03	10.66	0.56	3.32	8.15	4.77	2.10
FIT-231	Fuel Gas Flow	CFH	-0.63	109.70	-0.16	3.12	35.58	181.10	89.15	24.03	38.45	282.60	99.23	13.98	-1.18	39.15	10.27	17.91
PIT-222	Combustion Air Pressure	In.WC	24.68	25.25	24.95	0.08	25.43	26.07	25.88	0.10	24.13	25.80	25.02	0.43	23.27	24.20	23.59	0.36
FIT-221	Combustion Air Flow	CFH	11902	12091	11966	24	9850	11103	10207	238	9561	10491	9940	104	10398	11636	11252	51 <i>7</i>
PIT-158	Chamber Pressure (Draft)	In.WC	-0.45	-0.28	-0.29	0.02	-0.47	-0.20	-0.25	0.04	-0.35	-0.15	-0.25	0.04	-0.37	-0.08	-0.21	0.07
TiT-201	Recorder Temperature	Deg.F	29.70	33.75	31.24	0.90	37.20	558.15	369.87	132.35	427.95	557.48	543.86	16.08	120.68	505.35	255.28	110.74
TIT-202	Furnace Exit Gas Temp (Control)	Deg.F	29.70	33.68	31.27	0.86	37.20	565.13	373.52	133.64	428.48	561.30	547.58	16.69	120.30	506.85	254.66	111.37
TIT-203	Material Thermocouple #1	Deg.F	31.73	36.68	33.13	0.99	37.95	558.53	369.10	134.23	449.63	558.90	543.54	13.36	108.23	506.03	260.32	120.80
TIT-204	Material Thermocouple #2	Deg.F	32.78	38.25	34.28	1.50	33.60	375.23	220.68	98.70	375.38	484.00	449.66	31.95	245,03	483.00	370.32	75.40
TIT-205	Material Thermocouple #3	Deg.F	30.75	36.68	32.32	1.18	32.63	496.65	320.34	127.19	458.78	516.53	505.63	8.20	143.55	500.78	284.56	106.44
TIT-206	Material Thermocoupte #4	Deg.F	28.95	34.43	30.57	0.97	36.68	829.28	321.76	125.49	422.40	539.55	505.25	17.63	123.53	487.80	235.91	95.57
TIT-207	Material Thermocouple #5	Deg.F	31.50	35,25	32.86	0.89	38.10	624.98	399.22	140.12	456.38	659.93	576.99	17.90	131.25	518.63	272.54	115.09
				7.11	10, 10, 10					1 2434				1.52				7.75
18-181 18-181	Combustor Burner Temp. Control	Deg. F	41	1811	1769	141	1792	1828	1809	6	1767	1850	1807	16	292	1850	1403	602
TTT-140	Fumes Flow	PPH	2075	2626	2161	85	2115	2428	2247	63	1977	2288	2175	61	1715	2599	2272	203
PR 151	Furnes Pressure	InWC	0.44	0.71	0.47	0.04	0.26	0.67	0.47	0.06	0.16	0.51	0.31	0.05	0.07	0.69	0.43	0.16
MI-145	Combustor Temperature	Deg. F	42	1818	1773	138	1797	1836	1814	7	1772	1850	1814	17	269	1850	1396	618
HI-18	Fuel Pressure	PSIG	0.06	0.86	0.75	0.05	0.09	0.85	0.34	0.20	0.04	0.24	0.12	0.06	0.01	0.59	0.16	0.17
CEM	Fuel Gas Flow	CFH	367	1101	998	48	485	1093	716	135	347	684	525	110	1	879	426	318
NOx-B	Interconnecting Duct NOx	ppm	-1.30	1,38	-0.97	0.33	-1.33	36.93	0.32	1.72	-0.18	4.08	1.63	0.37	-0.73	0.15	-0.54	0.20
THC-B	Interconnecting Duct THC	ppm	-14.65	0.02	-1.02	3.74	-0.51	98.13	49.47	14,10	14.33	79.89	43.38	6.65	1.75	94.94	24.85	34.81
со	Stack's CO	ppm	-0.50	446.50	5.93	48.90	-0.50	449.50	28.36	106.07	-0.50	1.50	-0.30	0.28	-0.50	35.00	0.30	2.62
THC	Stack's THC	ppm	-8.15	50.59	-2.95	3.26	-100.0	100.00	-4.86	24.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NOx	Stack's NOx	ppm	-4.10	52.78	34.43	21.37	-5.03	95.38	47.37	16.91	33.58	114.20	62.13	15.15	-2.03	110.48	51.44	39.67
SO2	Stack SO2	ppm	-3.50	-1.50	-2.51	0.29	-20.50	0.00	-1.33	1.04	-0.50	1.00	80.0	0.29	-1.00	0.00	-0.59	0.26
O2	Stack's O2	%	11.88	20.80	17.80	2.71	11.85	16.10	13.49	1.38	11.73	11.88	11.79	0.03	11.80	14.83	12.57	0.84
CO2	Stack's CO2	95	0.06	17.90	4.45	2.77	0.08	20.30	6.74	3.00	3.90	8.54	5.9 5	0.76	0.04	6.58	3.50	2.44
TIT-300	Ambient Temp	Deg. F	32.00	34.88	32.02	0.22	32.00	34.34	32.12	0.39	33.98	54.68	44.29	5.97	49.28	52.88	51.40	0.81



 Date:
 7-Feb-96

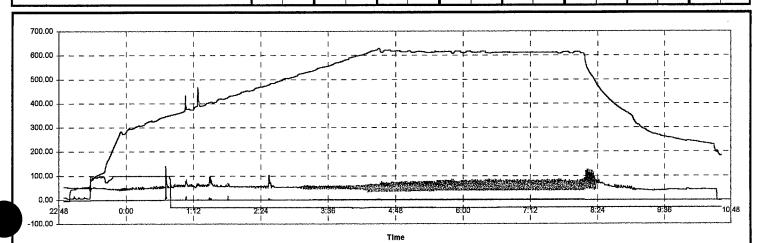
 Ilme:
 22:45

 Test Number:
 5

 Soak Time:
 4 Hrs.

 Soak Temp:
 Greater than 600 F

			22:53	WA	RM	23:21	23:21	RA	МР	4:08	4:08	SO.	AK	8:10	8:10	со	OL .	10:37
Tag	Parameter Description	Unit	Min.	Мах.	Ave.	Std.	Min.	Мах.	Ave.	Std.	Min.	Max.	Ave.	Std.	Mîn.	Мах.	Ave.	Std.
FURNACE									·····				· · · · · · · · · · · · · · · · · · ·					
PIT-232	Fuel Gas Pressure	In.WC	0.52	10.56	3.53	0.83	7.06	12.23	11.42	0.86	8,62	12.32	11.69	0.30	3.45	8.73	8.06	1.11
FIT-231	Fuel Gas Flow	CFH	-0.65	136.30	1.33	14.63	27.13	141.10	103.64	23.94	40.15	147.00	116.75	10.35	-1.68	42.23	35.23	9.72
PIT-222	Combustion Air Pressure	In.WC	0.11	25.34	23.69	3.91	24.59	25.54	25.29	0.16	24.39	25.56	25.27	0.19	22.62	24.40	23.87	0.38
FIT-221	Combustion Air Flow	CFH	122	11920	11512	1897	10159	11228	10351	203	10148	10922	10259	48	10814	12006	10938	250
PIT-1 <i>5</i> 8	Chamber Pressure (Draft)	In.WC	-0.44	0.02	-0.32	0.10	-0.50	-0.21	-0.26	0.03	-0.53	-0.20	-0.36	0.11	-0.57	-0.01	-0.41	0.09
TIT-201	Recorder Temperature	Deg.F	47.25	56.78	49.61	2.72	54.38	618.45	426.16	128.44	599.33	647.25	622.67	6.17	161.78	599.33	307.29	92.64
TIT-202	Furnace Exit Gas Temp (Control)	Deg.F	47.03	57.00	49.53	2.82	53.93	622.80	429.57	129.25	602.03	652.05	626.22	6.45	160.58	602.03	307.40	92.79
TIT-203	Material Thermocouple #1	Deg.F	50.18	61.73	51.62	1.33	61.73	802.73	450.27	133.19	615,45	677.93	649.59	7.76	160.80	615.45	295.39	110.84
TIT-204	Material Thermocouple #2	Deg.F	49.73	56.10	51.61	1.77	53.33	524.55	354.86	109.02	524.55	566.78	555.89	8.47	165.98	551.85	307.10	84.49
TIT-205	Material Thermocouple #3	Deg.F	48.98	57.00	51.06	2.12	53.55	566.93	378.84	124.24	586.93	593.93	586.69	3.96	187.20	576.53	324.37	94.78
TIT-206	Material Thermocouple #4	Deg.F	48.08	52.20	49.65	1.12	51.00	595.13	397.11	133.16	595.13	626.70	615.53	4.47	208.88	604.88	338.56	94.28
TIT-207	Material Thermocouple #5	Deg.F	51.00	62,78	52,62	1.61	62.78	725.70	467.02	135.84	621.75	699.30	662.13	10.23	179.78	621.75	328.44	96.64
arrenten.								<u>-</u>						- 21 J		7 9 4	[3 % T.]	
W-131	Combustor Burner Temp. Control	Deg. F	63	1788	1224	689	1750	1828	1809	8	1783	1842	1814	17	928	1839	1782	116
PH-147	Fumes Flow	PPH	526	2542	2177	472	2191	2542	2288	45	2028	2329	2137	73	1106	3375	2878	373
PII-151	Furnes Pressure	InWC	0.04	0.69	0.48	0.14	0.39	0.67	0.44	0.03	0.18	0.43	0.32	0.05	-0.06	1.45	0.96	0.33
19-145	Combustor Temperature	Deg. F	63	1798	1240	694	1757	1838	1815	9	1786	1850	1821	19	889	1850	1784	123
PH-133	Fuel Pressure	PSIG	0.01	0.85	0.66	0.34	0.07	0.85	0.26	0.20	0.04	0.24	0.10	0.06	0.00	0.88	0.60	0.28
CEM	Fuel Gas Flow	CFH	1	1105	874	441	455	1102	668	138	332	676	485	129	1	1099	899	272
	A Committee Secretary						-1.03	07.45	1.15	3.16	1.18	3.13	2.28	0.27	-0.68	1.18	-0.40	0.21
NOx-B	Interconnecting Duct NOx	ppm	-1.23	-1.03	-1.14	0.06		87.45 100.00	7.38	58.69	-34.20	-30.26	-31.19	0.75	-31.58	-30.26	-30.46	0.18
THC-B	Interconnecting Duct THC	ppm	-0.50	22.59 105.00	7.47 2.08	12.64	-34.25 -0.50	0.00	-0.12	0.22	-0.50	0.50	-0.08	0.75	-0.50	116.50	0.65	7.19
THC	Stack's CO Stack's THC	ppm	0.00	0.00	0.00	0.00	-0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NOx	Stack's NOx	ppm	-4.13	55.18	37.33	22.63	41.05	138.30	55.08	7.55	34,23	89.63	58.21	15.86	-1.85	125.78	48.14	17.61
SO2	Stack SO2	ppm	2.00	4.00	2.62	0.41	2.50	6.00	4.75	0.59	34,23	4.50	3,85	0.45	2.50	3.50	2.70	0.26
02	Stack's O2	% %	11.70	21.13	14.08	3.74	10.25	12.70	11.36	0.34	9.25	13.38	11.38	1.37	10.83	20.80	13.04	1.52
CO2	Stack's CO2	96	0.02	6.02	4.55	2.42	5.32	6.66	6.07	0.22	4.62	7.42	5.97	0.91	-0.02	6.42	4.94	0.98
TIT-300	Amblent Temp	Deg. F	36.68	38.30	37.72	0.36	33.26	37.94	35.12	0.95	32.90	42.44	35.62	2.49	41.72	57.02	49.37	4.71



 Date:
 12-Feb-96

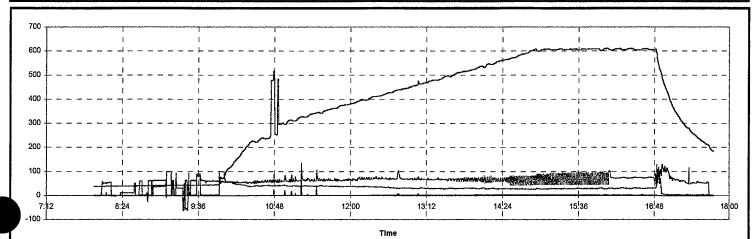
 Time:
 8:03

 Test Number:
 6

 Soak Time:
 2 Hrs.

 Soak Temp:
 Greater than 600 F

			8:03	WA	RM :	9:55	9:55	RA	MP	14:49	14:49	so	AK	16:49	16:49	co	OL	17:44
Tag	Parameter Description	Unit	Min.	Мах.	Ave.	Std.	Min.	Max.	Ave.	Std.	Min.	Max.	Ave.	Std.	Min.	Max.	Ave.	Std
FURNACE				'	···			<u> </u>					·			······	·	
PIT-232	Fuel Gas Pressure	In.WC	3.66	10.66	3.82	0.34	3.77	11.63	11.07	0.62	10.05	11.63	11.36	0.13	3.23	10.07	4.07	1.43
FIT-231	Fuel Gas Flow	CFH	-1.70	104.50	-1.12	5.01	-1.60	141.38	103.66	22.38	66.15	139.93	119.55	6.95	-0.85	66.15	2.72	12.11
PiT-222	Combustion Air Pressure	In.WC	23.35	24.69	23.70	0.22	23.47	24.87	24.63	0.11	24.57	24.82	24.72	0.04	23.27	24.57	23.44	0.27
FIT-221	Combustion Air Flow	CFH	10403	12408	12220	110	10047	12116	10221	179	10088	10528	10172	34	10527	12280	12059	365
PIT-158	Chamber Pressure (Draft)	In.WC	-0.73	-0.17	-0.37	0.03	-0.73	-0.16	-0.34	0.12	-0.57	-0.47	-0.50	0.01	-0.89	-0.12	-0.42	0.18
TIT-201	Recorder Temperature	Deg.F	39.08	63.15	42.62	2.13	63.15	631.50	436.25	124.69	618.75	640.05	630.63	3.27	157.58	618.75	305.27	107.36
TIT-202	Furnace Exit Gas Temp (Control)	Deg.F	39.15	62.93	42.83	2.12	62.93	636.00	439.48	125.35	622.50	644.55	634.52	3.39	157.95	622.50	303.18	107.52
TIT-203	Material Thermocouple #1	Deg.F	39.53	50.78	42.76	1.76	50.78	604.80	385.40	123.87	804.43	633.15	621.57	6.77	197.63	620.25	354.13	108.24
TIT-204	Material Thermocouple #2	Deg.F	38.40	56.48	42.18	2.06	56.48	610.35	404.89	128.98	604.13	621.38	614.71	3.70	177.60	604.13	301.45	100.06
TIT-205	Material Thermocouple #3	Deg.F	36.68	43.88	40.26	1.91	43.58	1200.00	374.53	195.85	581.25	605.63	601.23	4.87	244.58	604.50	403.75	110.01
TIT-206	Material Thermocouple #4	Deg.F	39.45	69.98	43.49	2.42	69.98	537.75	362.88	105.69	526.88	\$50.88	542.63	3.71	127.05	526.88	231.03	102.06
TIT-207	Material Thermocouple #5	Deg.F	39.38	69.60	43.31	2.38	69.60	669.00	470.57	126.88	637.65	672.83	659.49	4.76	175.58	637.65	327.60	114.72
ATTEMEN													1					
m-131	Combustor Burner Temp. Control	Deg. F	44	1827	1731	216	1780	1831	1809	8	1782	1850	1816	16	896	1843	1738	178
m-169	Fumes Flow	PPH	2102	2560	2342	55	2116	2594	2333	47	2107	2322	2191	27	2099	4000	3071	430
PIT-151	Fumes Pressure	InWC	0.34	0.70	0.52	0.04	0.29	0.75	0.43	0,06	0.27	0.36	0.32	0.01	0.34	2.01	1.16	0.41
IP-146	Combustor Temperature	Deg. F	46	1832	1739	210	1783	1841	1815	9	1786	1850	1823	18	854	1850	1738	189
(ff-158)	Fuel Pressure	PSIG	0.08	0.84	0.82	0.05	0.04	0.82	0.28	0.18	0.04	0.22	0.10	0.05	0.01	0.85	0.57	0.32
122	Fuel Gas Flow	CFH	477	1109	1081	41	342	1092	680	127	330	681	498	113	1	1100	840	332
CEM								<u> </u>	7.5						1111111		1.15 %	
NOx-B	Interconnecting Duct NOx	ppm	-0.78	86.90	2.52	14.69	-0.23	63.93	2.01	3.20	2.30	4.70	3.08	0.34	-0.30	2.30	-0.14	0,30
THC-B	Interconnecting Duct THC	ppm	-62.95	100.00	12.44	27.07	26.52	100.00	36.75	10.37	26.25	36.22	29.66	1.45	2.14	71.66	8.70	17.43
со	Stack's CO	ppm	-0.50	497.00	54.01	103.44	0.00	0.50	0.00	0.04	0.00	0.50	0.00	0.02	0.00	3.00	0.04	0.26
THC	Stack's THC	ppm	-0.63	0.52	-0.13	0.52	-0.6	-0.62	-0.62	0.00	-0.62	-0.62	-0.62	0.00	-0.63	0.54	-0.56	0.23
NOx	Stack's NOx	ppm	0.13	90.08	33.06	30.90	43.30	134.55	65.80	8.07	44.35	103.18	71.89	15.09	1.40	129.53	64.01	27.98
SO2	Stack SO2	ppm	-1.50	129.00	3.73	21.63	-0.50	1.00	0.03	0.28	-0.50	0.50	-0.02	0.23	-1.00	0.00	-0.29	0.25
02	Stack's O2	%	-0.08	17.60	9.09	4.83	10.63	14.38	12.49	0.49	10.20	14.63	12.36	1.21	11.20	22.30	15.17	2.14
CO2	Stack's CO2	96	-0.20	22.82	3.42	4.46	0.62	0.98	0.76	0.05	0.60	1.04	0.83	0.10	-0.06	0.92	0.60	0.20
TIT-300	Ambient Temp	Deg. F	37.04	42.44	39.54	1.35	41.72	52.70	47.77	2.85	46.22	50.54	48.10	0.88	43.16	46.94	45.31	0.80



 Date:
 14-Feb-96

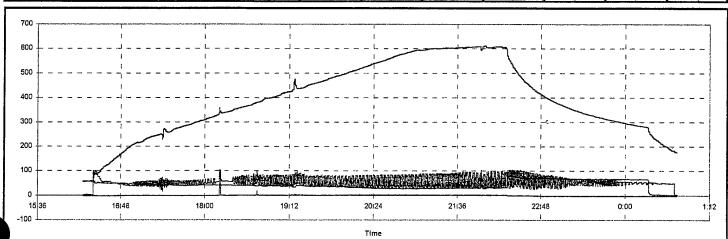
 Time:
 0:45

 Test Number:
 7

 Soak Time:
 1 Hrs.

 Soak Temp:
 Greater than 600 F

			16:16	WA	RM	16:24	16:24	RA	MP	21:13	21:13	so	AK	22:18	22:18	CC	OL	0:19
Tag	Parameter Description	Unit	Min.	Max.	Ave.	Std.	Min.	Max.	Ave.	Std.	Min.	Max.	Ave.	Std.	Min.	Мах.	Ave.	Std.
FURNACE					·													
PIT-232	Fuel Gas Pressure	In.WC	3.61	10.62	3.85	1.22	3.73	11.69	10.84	0.89	9.45	11.76	11.47	0.19	4.42	9.45	8.74	0.20
FiT-231	Fuel Gas Flow	CFH	-1.15	135.35	3.64	23.88	-1.10	139.15	98.81	27.30	52.90	137.35	119.81	8.83	-0.63	52.90	40.49	1.98
PIT-222	Combustion Air Pressure	In.WC	22:81	24.13	22.89	0.22	22.87	24:84	24.47	0.25	24.45	24.96	24.81	0.06	23.47	24.47	24.33	0.06
FIT-221	Combustion Air Flow	CFH	10275	12045	11964	304	10052	11984	10245	201	10091	10672	10163	52	10672	11927	10866	51
PIT-158	Chamber Pressure (Draft)	In.WC	-0.48	-0.19	-0.31	0.04	-0.59	-0.14	-0.38	0.12	-0.50	-0.40	-0.44	0.01	-0.48	-0.18	-0.25	0.05
TIT-201	Recorder Temperature	Deg.F	58.88	80.25	60.05	3.71	80.25	651.90	429.55	147.30	622.20	656.85	646.70	4.45	265.65	635.85	356.45	79.14
TIT-202	Furnace Exit Gas Temp (Control)	Deg.F	59.33	81,08	60.34	3.79	81.08	656.03	432.51	148.11	624.83	88_08	550.28	4.52	266.70	639.30	357.18	79.11
TIT-203	Material Thermocouple #1	Deg.F	80.08	62.10	60.38	0.34	62.10	623.33	387.92	154.42	623.33	632.73	627.45	1.98	295.13	630.00	406.04	91.70
TIT-204	Material Thermocouple #2	Deg.F	58.73	78.15	59.65	3.41	76.05	646.05	408.30	155.07	640.95	648.30	645.95	1.73	280.13	640.95	362.48	77.15
TíT-205	Material Thermocouple #3	Deg.F	53.40	56.55	53.80	0.52	56,55	466.65	279.27	108.38	465.83	514.50	493.62	14.53	313.50	513.90	392.94	54.97
TIT-206	Material Thermocouple #4	Deg.F	59.70	76.65	60.57	2.92	76.28	609.15	367.01	134.30	854.78	552.30	578.54	S.70	218.63	566.93	299.91	81.54
TIT-207	Material Thermocouple #5	Deg.F	59,93	92.85	61.24	5.73	88.65	690.38	466.24	151.72	640.75	697.35	481.19	7.01	290.63	664.43	383.65	78.31
AFTERBUR	HER		5.62 J. 621			100 100 21	ত চত্ত্ৰভাগৰ	का का संस्था	Cusus at	A 3 15 (A 8 8 8 8	200000000		हिटा के उस	11111	o 10000 1 1 1	3112 x 123		
EIII-131	Combustor Burner Temp. Control	Deg. F	1652	1774	1735	39	1704	1850	1801	28	1756	1850	1806	34	1756	1850	1804	23
PT-149	Fumes Flow	РРН	2199	2401	2298	33	2056	2449	2205	92	2023	2131	2073	12	2053	2545	2437	103
8n-151 = Ja	Furnes Pressure	InWC	0.38	0.55	0.48	0.03	0.26	0.61	0.38	0.08	0.24	0.31	0.28	0.01	0.27	0.69	0.58	0.09
MT-145	Combustor Temperature	Deg. F	1549	1656	1621	34	1579	1741	1678	30	1630	1738	1683	37	1631	1738	1681	24
PIT-133	Fuel Pressure	PSIG	0.81	0.82	0.82	0.00	0.07	0.82	0.44	0.19	0.06	0.62	0,30	0.21	0.06	0.73	0.50	0.15
π-121 CEM	Fuel Gas Flow	CFH	1100	1102	1101	0	240	1102	693	229	236	876	522	247	239	972	751	184
7				Section 1	1990yrp1	-55 E. 1951	ar eyer	9 (18 Tel	Larson I	38080.80	ant ein		na gradi	ograe y		. 7		
NOx-B	Interconnecting Duct NOx	ppm	-1.63	-1.55	-1.58	0.01	-1.58	86.30	18.0	3.41	0.20	2.45	1.85	0.30	-1.33	1.63	-1.14	0.26
THC-B	Interconnecting Duct THC	ppm	- 2.22	100.00	5.48	16,94	15.99	100.00	38.82	9.91	27.25	44.18	30.09	2.05	31.17	80.27	48.80	3.78
co	Stack's CO	ppm	0.00	0.00	0.00	0.00	-0.50	1.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.02
THC	Stack's THC	ppm	100.00	100.00	100.00	0.00	-1.6	100.00	7.16	28.12	-1.57	-1.22	-1.41	0.07	-1.62	-1.26	-1.46	0.07
NOx	Stack's NOx	ppm	56.03	59.43	57.25	0.94	23.48	102.33	56.12	15.38	30,40	102.48	58.32	23.79	26.73	102.50	57.14	17.19
SO2	Stack SO2	ppm	2.00	2.50	2.08	0.18	0.50	2.50	1.36	0.36	1.00	2.00	1.55	0.17	1.00	2.00	1.52	0.15
02	Stack's O2	95	11.40	11.63	11.49	0.06	7.58	14.33	11.14	1.52	7.63	14.18	11.20	2.19	7.85	15.48	12.30	1.23
CO2	Stack's CO2	% 5 r	6.42	6.56	6.50	0.04	4.06	9.84	6.79	1.29	4.28	9.80	6.80	1.87	3.30	9.64	5.84	1.00
TIT-300	Ambient Temp	Deg. F	55.40	56.66	56.00	0.29	44.78	58.82	49.17	3.31	43.52	46.22	44.68	0.57	42.80	45.86	44.05	0.54



 Date:
 15-Feb-96

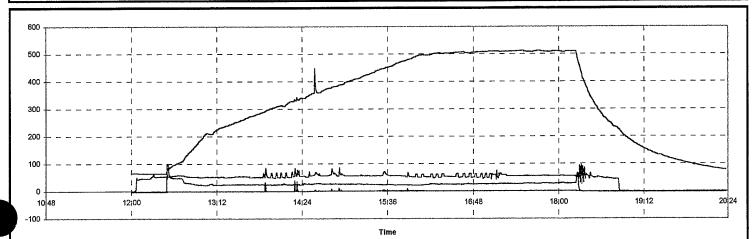
 Time:
 20:25

 Test Number:
 8

 Soak IIme:
 2 Hrs.

 Soak Temp:
 Greater than 500 F

			12:03	WA	RM	12:29	12:29	RA.	MP	16:13	16:13	SO.	AK	18:15	18:15	co	OL	18:18
Tag	Parameter Description	Unit	Min.	Мах.	Ave.	Std.	Min.	Max.	Ave.	Stđ.	Min.	Мах.	Ave.	Std.	Min.	Max.	Ave.	Std.
FURNACE																		
PIT-232	Fuel Gas Pressure	In.WC	2.70	9.86	3.19	0.74	5.26	11.85	10.29	1.38	4.37	11.78	11.36	1.26	4.52	9.28	6.46	2.27
FIT-231	Fuel Gas Flow	CFH	-1.60	135.95	-0.20	13.29	1,38	135.95	81.06	25.67	-0.73	115.95	93.17	18.78	-0.73	37.95	14.13	19.52
PIT-222	Combustion Air Pressure	In.WC	22.11	23.53	22.31	0.17	22.72	23.72	23.46	0.18	22.30	23.98	23.74	0.27	22.37	23.45	22.80	0.51
FIT-221	Combustion Air Flow	CFH	10236	12083	11959	184	10166	11302	10565	253	10641	12881	10839	372	11517	12858	12291	625
PIT-158	Chamber Pressure (Draft)	In.WC	-1.00	-0.27	-0.67	0.30	-1.00	-0.58	-0.75	0.12	-0.61	-0.17	-0.56	0.07	-0.39	-0.17	-0.22	0.08
TIT-201	Recorder Temperature	Deg.F	63.23	66.60	63.88	0.61	66.60	552.45	373.83	122.60	360.53	551.93	542.03	25.33	406.43	521.40	465.09	38.53
TiT-202	Furnace Exit Gas Temp (Control)	Deg.F	63.53	66.45	64.21	0.61	66.30	556.28	376.67	123.33	357.53	555.60	545.24	26.31	404.03	523.88	465.22	40.03
TIT-203	Material Thermocouple #1	Deg.F	63.75	67.73	64.78	0.69	67.73	523.50	347.39	118.31	408.15	525.83	516.68	11.74	473.10	505.43	489.25	8.95
TIT-204	Material Thermocouple #2	Deg.F	65.33	66.30	65.68	0.22	65.93	414.68	270.51	90.80	371.63	461.63	439.50	15.46	394.35	451.28	424.67	19.78
TIT-205	Material Thermocouple #3	Deg.F	65.93	67.20	66.45	0.36	65.93	507.45	313.12	125.94	499.28	530.70	525.15	6.18	515.93	529.58	523.76	4.37
TIT-206	Material Thermocouple #4	Deg.F	64.05	66.00	64.55	0.41	65.10	483.15	312.14	113.17	407.70	489.30	484.60	10.47	432.98	474.30	451.77	12.95
TiT-207	Material Thermocouple #5	Deg.F	65.70	70.05	66.31	0.50	70.05	873.00	402.12	126.27	390.08	581.93	567.92	25.56	436.20	533.10	481.28	30.39
							ļ						لسنسنا	1000		 -		
30 -131	Combustor Burner Temp. Control	Deg. F	78	1743	1493	392	1741	1850	1809	18	1756	1850	1815	20	1779	1832	1804	15
21 -149	Fumes Flow	PPH	2103	2588	2380	95	1968	2588	2104	103	1960	2732	2012	101	2149	2584	2340	114
P II-151	Fumes Pressure	InWC	0.37	0.73	0.55	0.06	0.20	0.73	0.31	0.09	0.20	0.81	0.25	0.08	0.36	0.69	0.49	0.09
т.145	Combustor Temperature	Deg. F	83	1759	1516	388	1756	1876	1822	20	1762	1888	1828	23	1788	1847	1815	17
Per-185	Fuel Pressure	PSIG	0.02	0.81	0.79	0.11	0.30	0.81	0.45	0.13	0.15	0.80	0.35	0.06	0.15	0.61	0.40	0.13
ff-121	Fuel Gas Flow	CFH	138	1108	1084	131	510	1103	728	150	329	1063	572	71	369	879	629	148.
CEM			- No. 12							1.45 184	7 3				1 24		1 - 1 - 1	
NOx-B	Interconnecting Duct NOx	ppm .	-0.68	-0.58	-0.62	0.03	-0.63	38.05	0.92	2.57	-0.60	1.60	0.89	0.34	-0.45	0.18	-0.27	0.17
THC-B	Interconnecting Duct THC	ppm	-2.50	-1.34	-2.32	0.21	-2.46	100.00	26.99	8,60	-0.70	61.55	26.97	5.57	1.72	61.55	34.99	25.74
со	Stack's CO	ppm	-0.50	131.50	4.19	21.25	-1.00	-0.50	-0.50	0.02	-0.50	-0.50	-0.50	0.00	-0.50	-0.50	-0.50	0,00
THC	Stack's THC	ppm	-4.51	54.10	-3.07	6.68	-5.1	-3.60	-4.72	0.16	-5.12	-4.75	-4.92	0.07	-5.10	-4.85	-4.99	0.07
NOx	Stack's NOx	ppm	2.10	63.30	48.33	10.29	47.28	86.60	56.45	5.23	26.63	98.25	56.34	5.80	45.15	94.00	63.33	14.42
SO2	Stack SO2	ppm	0.50	1.00	0.78	0.25	0.00	1.00	0.75	0.25	0.00	1.00	0.49	0.16	0.00	0.50	0.46	0.14
O2	Stack's O2	%	11.68	20.93	12.89	1.61	10.05	12.53	11.63	0.35	9.78	16.38	11.77	0.64	12.00	14.65	12.92	0.81
CO2	Stack's CO2	%	0.04	5.96	5.16	1.01	5.28	6.90	5.93	0.22	2.66	7.20	5.84	0.42	3.90	5.74	5.07	0.55
TIT-300	Amblent Temp	Deg. F	57.38	59.72	58.73	0.48	53.24	61.88	57.52	2.31	45.14	54.68	49.44	2.06	45.14	46.94	46.14	0.51



 Date:
 19-Feb-96

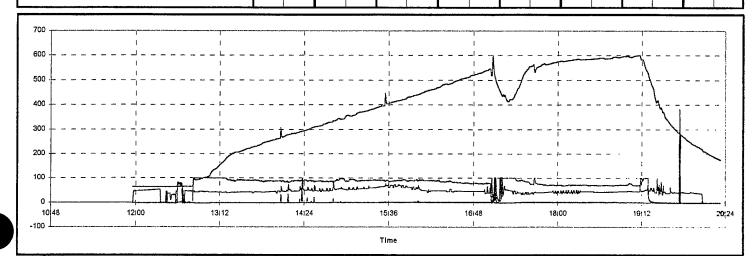
 Time:
 20:45

 Test Number:
 9

 Soak Time:
 0 Hrs.

 Soak Temp:
 Greater than 600 F

	_,																	
			11:57	WA	RM	12:49	12:49	RA	MP	19:08	19:08	so	AK .	19:10	19:10	cc	OOL	20:45
Tag	Parameter Description	Unit	Min.	Мах.	Ave.	Std.	Min.	Max.	Aye.	Std.	Min.	Max.	Ave.	Std.	Min.	Мах.	Ave.	Std.
FURNACE																		
PIT-232	Fuel Gas Pressure	In.WC	3.97	11.37	4.10	0.67	3.96	13.65	11.07	1.46	11.77	11.84	11.80	0.02	3.49	11.82	4.21	1.60
FIT-231	Fuel Gas Flow	CFH	-1.60	132.18	-0.23	11.83	-1.38	381.33	100.48	38.12	123,75	127.53	124.32	1.30	-1.03	123.75	3.69	18.98
PIT-222	Combustion Air Pressure	In.WC	21.38	23.11	21.50	0.16	21.48	23.82	23.24	0.43	23.63	23.73	23.67	0.03	21.54	23.64	21.90	0.40
FIT-221	Combustion Air Flow	CFH	10681	12769	12703	193	10391	12842	10731	404	10559	10584	10573	9	1	12941	12693	792
PIT-158	Chamber Pressure (Draft)	In.WC	-0.44	-0.19	-0.37	0.02	-0.89	-0.14	-0.45	0.10	-0.57	-0.56	-0.57	0.00	-1.00	1100.2	2.20	5 6.25
TIT-201	Recorder Temperature	Deg.F	65.55	78.60	66.40	1.00	78.60	661.28	467.83	154,72	652.43	653.25	652.70	0.29	-1.20	653.25	244.77	137.15
TIT-202	Furnace Exit Gas Temp (Control)	Deg.F	65.93	78.30	66.64	0.94	78.30	668.40	471.18	155.86	65 8.7 0	687.53	555.97	0.25	-0.36	657.53	243.36	137.27
TIT-203	Material Thermocouple #1	Deg.F	67.35	83.48	68.36	1.13	83.48	645.30	413.67	141.57	587.50	873.18	591.17	7.03	-0.50	593.63	221.66	137.07
TIT-204	Material Thermocouple #2	Deg.F	57.60	61.73	58.73	0.71	61.73	531.53	332.45	128.77	531.53	532.58	331.96	0.35	-1.06	532.80	311.80	100.12
TIT-205	Material Thermocouple #3	Deg.F	62.03	65.10	63.66	0.81	65.10	624.23	403.19	169.36	624.23	624.78	£24.55	0.24	41.80	625.28	348.82	143.76
TIT-206	Material Thermocouple #4	Deg.F	66.15	78.98	66.83	0.93	78.98	591.60	408.01	134.61	574.73	575.70	578.21	0.30	0.50	575.33	219.42	120.97
TIT-207	Material Thermocouple #5	Deg.F	65.78	81.53	66.71	1.14	81.53	774.60	497 <i>.77</i>	156.96	679.38	680.33	477.81	0.33	13.33	679.35	267.88	141.38
AFTERBUR	MER							,					, ·······					
m-131	Combustor Burner Temp. Control	Deg. F	592	1802	1715	182	1282	1850	1792	48	1815	1816	1815	0	5	1850	1198	485
FIT-14 T	Fumes Flow	PPH	2372	2569	2446	31	1760	25 11	2153	112	2021	2057	2043	11	56	4000	3423	635
P11-151 4	Fumes Pressure	InWC	0.51	0.65	0.56	0. 01	-0.04	0.60	0.31	0.08	0.23	0.26	0.25	0.01	0.17	296.49	2.25	15.08
TIT-145	Combustor Temperature	Deg. F	572	1814	1729	180	1261	1906	1804	52	1829	1829	1829	0	193	1873	1191	704
PIT-133	Fuel Pressure	PSIG	0.75	0.80	0.79	0.02	0.00	0.83	0.41	0.12	0.31	0.32	0.32	0.00	0.01	38.00	0.48	1.96
TIT-121	Fuel Gas Flow	CFH	1053	1104	1092	15	1	1100	647	152	531	531	531	0	0	1102	519	493
CEM			L. 2 7 7	errin a tual	Comprose Self	at to the co	E				15		· · · · · · · · · · · · · · · · · · ·				, ———	
NOx-B	Interconnecting Duct NOx	ppm	-1-35	80.85	4.85	21.08	-1.28	51.85	1.11	2.88	1.20	1,43	1.83	0.08	-1.25	244.28	-0.47	12.56
THC-B	Interconnecting Duct THC	ppm	-2.33	100.00	3.94	13.22	7,13	100.00	84.53	13.11	69.12	71.03	69,88	0.62	-1,54	241.58	8.15	28,40
co	Stack's CO	ppm	-1.00	125.00	18.79	42.44	-1.00	425.50	1.81	23.56	-0.50	-0.50	-0,50	0.00	-0.50	202.95	0.46	10.65
THC	Stack's THC	ppm	-5.28	0.75	-2.88	2.26	-1.1	26.58	-0.82	1.48	-1.12	-0.93	-1.03	0.07	-1.21	331.13	0.51	17.08
NOx	Stack's NOx	ppm	-1.30	83.78	38.21	24.44	0.80	103.33	48.79	10.62	45.60	45.85	45.74	0.07	-1.20	381.98	25.69	30.07
SO2	Stack SO2	ppm	-1.50	122.00	8.29	31.82	-1.50	0.50	-0.41	0.43	0.00	0.50	0.06	0.18	0.00	222.08	0.88	11.35
O2	Stack's O2	96	-0.28	19.85	9.22	5.05	8.28	20.63	11.50	1.13	11.08	11.10	11.08	0.01	10.95	272.10	17.24	13.61
CO2	Stack's CO2	%	-0.12	5.48	4.15	2.11	0.14	8.16	5.94	0.72	6.18	6.20	6.19	0.01	-0.06	1771.6	7.25	90.54
TIT-300	Ambient Temp	Deg. F	62.42	65.48	63.80	0.74	55.40	68.90	60.49	4.06	55.40	55.76	55.63	0.19	55.04	3185,5	63.88	160.14



 Date:
 20-Feb-96

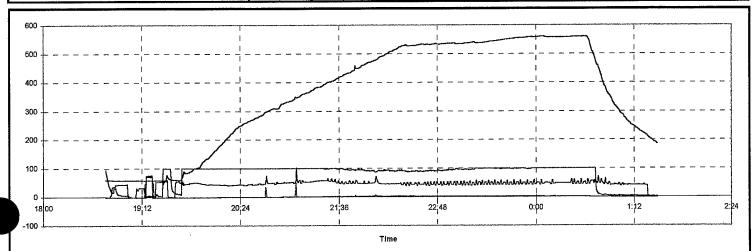
 Time:
 6:45

 Test Number:
 10

 Soak Time:
 1 Hrs.

 Soak Temp:
 Greater than 550 F

			18:49	WA.	RM	19:41	19:41	RA	MP	23:37	23:37	SO.	AK	0:38	0:38	co	OL	1:29
Tag	Parameter Description	Unit	Min.	Мах.	Ave.	Stđ.	Min.	Max.	Ave.	Std.	Min.	Max.	Ave.	Std.	Min.	Max.	Ave.	Std.
FURNACE																		
PIT-232	Fuel Gas Pressure	In.WC	3.97	11.42	4.32	0.69	3.97	12.87	12.02	1.11	11.87	12.49	12.38	0.08	3,88	11.92	4.77	1.69
FIT-231	Fuel Gas Flow	CFH	-1.10	121.68	3.25	20.60	-0.85	147.08	106.57	29.88	85.33	119.45	111.43	4.48	-0.70	85.33	3.66	14.24
PiT-222	Combustion Air Pressure	In.WC	22.19	23.89	22.31	0.17	22.19	24.53	24.22	0.30	24.36	24.53	24.41	0.03	22.50	24.40	22.72	0.40
FIT-221	Combustion Air Flow	CFH	10895	13030	12925	197	10570	12983	10795	294	10680	10922	10732	31	10922	13153	12889	473
PIT-158	Chamber Pressure (Draft)	In.WC	0.84	-0.18	-0.37	0.10	-0.84	-0.17	-0.24	0.06	-0.25	-0.17	-0.24	0.01	-0.89	-0.1	-0.46	0.21
TIT-201	Recorder Temperature	Deg.F	55.95	84.45	58.76	4.57	71.33	606.53	451.38	153.98	596.70	613.43	609.18	2.32	157.65	596.70	287.75	111.12
TIT-202	Furnace Exit Gas Temp (Control)	Deg.F	56.18	85.80	58.97	4.69	71.70	610.73	455.15	154.95	599.85	617.85	613.09	2.41	156.53	599.85	285.91	111.56
TIT-203	Material Thermocouple #1	Deg.F	57.75	75.90	60.00	3.17	68.63	564.23	405.43	145.80	559.73	573.98	568.70	2.59	168.60	559.73	312.11	119.41
TIT-204	Material Thermocouple #2	Deg.F	59.48	69.83	60.88	1.45	63.23	443.33	306.20	112.28	443.33	483.38	464.73	11.77	222.68	483.00	328.46	74.03
TIT-205	Material Thermocouple #3	Deg.F	57.60	60.60	59.08	0.94	60.08	579.90	396.11	166.54	579.90	592.20	588.98	2.91	235.80	590.18	388.98	110.69
TIT-206	Material Thermocouple #4	Deg.F	56.85	85.73	59.02	3.82	73.88	526.58	376.17	134.70	512.18	533.10	528.50	2.33	139.35	512.18	245.69	93.16
TIT-207	Material Thermocouple #5	Deg.F	58.43	102.30	61.24	5.99	79.80	647.25	483.87	161.11	616.50	648.45	641.64	3.85	166.88	616.50	299.04	112.90
					7.45	- 11 - 1 - 1		· · · · · · · · · · · · · · · · · · ·	(T-17-1)					ng fayin			5.13, 3.1	
m-181	Combustor Burner Temp. Control	Deg. F	81	1850	1571	351	1764	1850	1810	15	1782	1848	1807	14	674	1819	1661	295
EIT-149	Fumes Flow	PPH	1534	2627	2321	125	1986	2676	2166	91	1966	2057	1998	12	2057	4000	3192	509
PII-151	Fumes Pressure	InWC	0.06	0.77	0.51	0.08	0.15	0.77	0.35	0.08	0.22	0.28	0.23	0.01	0.28	2.00	1.30	0.47
TIT-145	Combustor Temperature	Deg. F	89	1905	1587	355	1781	1873	1823	17	1792	1867	1821	16	622	1831	1662	315
PH-135	Fuel Pressure	PSIG	0.00	0,82	0.73	0.25	0.28	0.83	0.47	0.13	0.27	0.40	0.32	0.03	0.01	0.85	0.61	0.31
CEM	Fuel Gas Flow	CFH	1	1105	983	333	467	1105	695	153	466	652	529	55	1	1097	811	395
NOx-B	Interconnecting Duct NOx	ppm	-0.48	76.93	6.26	21.17	-0.40	48.58	1.94	2.61	1.30	2.58	2.19	0.17	-0.15	1.33	0.01	0.25
THC-B	Interconnecting Duct THC	ppm	-1.21	100.00	22.41	29.93	86.21	100.00	96.93	3.95	96.43	100.00	99.65	0.70	1.19	100.00	14.50	29.85
со	Stack's CO	ppm	-0.50	204.50	22.57	45.83	-0.50	-0.50	-0.50	0.00	-0.50	-0.50	-0.50	0.00	-0.50	22.00	-0.10	2.16
THC	Stack's THC	ppm	-1.07	100.00	5.69	20.62	-1.4	-0.82	-1.19	0.09	-1.46	-1.08	-1.27	0.06	-1.44	17.25	-0.50	2.59
NOx	Stack's NOx	ppm	-0.45	73.78	31.83	26.13	39.35	102.25	48.59	5.70	42.90	61.70	49.06	4.46	0.58	71.00	39.14	16.70
\$02	Stack SO2	ppm	2.00	137.00	15.75	35.42	2.50	4.50	3.54	0.48	4.00	4.50	4.13	0.22	4.00	4.50	4.26	0.25
O2	Stack's O2	%	-0.23	20.85	9.51	6.34	10.05	12.45	11.38	0.46	10.13	12.40	11.55	0.55	10.85	20.98	14.61	2.57
CO2	Stack's CO2	96	-0.14	6.90	3.54	2.60	5.44	7.02	6.17	0.29	5.48	6.92	6.04	0.36	0.02	6.4	4.01	1.63
TIT-300	Ambient Temp	Deg. F	48.20	52.88	50.87	0.96	41.72	56.66	45.87	2.32	41.36	44.78	43.06	0.69	40.46	43.5	41.85	0.66



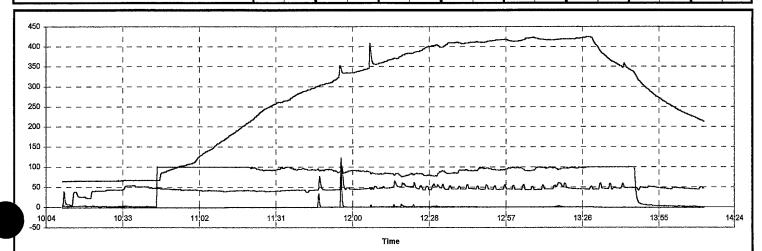
Date: 22-Feb-96
Time: 14:30

 Test Number:
 11

 Soak Time:
 1 Hrs.

 Soak Temp:
 Greater than 400 F

			10:11	WA	RM	10:47	10:47	RA.	MP	12:28	12:28	so	AK	13:32	13:32	co	OL	14:12
Tag	Parameter Description	Unit	Min.	Мах.	Ave.	Std.	Min.	Max.	Ave.	Std.	Min.	Max.	Ave.	Std.	Min.	Мах.	Ave.	Std.
FURNACE																		
PIT-232	Fuel Gas Pressure	In.WC	4.03	4.42	4.10	0.04	4.12	11.62	10.69	1.21	8.53	11.57	11.06	0.34	4.02	11.68	5.55	2.09
FiT-231	Fuet Gas Flow	CFH	-1.58	117.10	-0.56	9.94	-1.45	139.90	79.76	32.83	24.10	112.30	92.34	10.69	-1.58	136.63	2.77	14.33
PiT-222	Combustion Air Pressure	In.WC	21.44	21.72	21.53	0.07	21.47	23.16	22.91	0.24	22.33	23.04	22.91	0.08	21.10	23.00	21.61	0.54
FIT-221	Combustion Air Flow	CFH	12655	12813	12727	32	10419	12692	10753	369	10439	11345	10607	95	10373	12628	12181	581
PIT-158	Chamber Pressure (Draft)	In.WC	-0.40	-0.19	-0.33	0.05	-0.34	-0.14	-0.26	0.02	-0.48	-0.25	-0.41	0.06	-0.45	0.0	-0.23	80.0
TIT-201	Recorder Temperature	Deg.F	66.60	68.85	67.98	0.56	68.48	454.50	300.86	106.24	417.98	459.30	452.15	5.16	185,40	417.98	272.69	69.02
TIT-202	Furnace Exit Gas Temp (Control)	Deg.F	66.75	69.00	68.14	0.57	68.55	457.58	303.16	107.00	419.33	462.38	454.82	5.39	184.43	419.33	271.87	69.96
TIT-203	Material Thermocouple #1	Deg.F	68.03	70.88	69.46	0.81	70.13	503.33	289.18	117.47	449.10	469.95	463.47	3.67	231.75	457.05	339.50	68.02
TIT-204	Material Thermocouple #2	Deg.F	64.80	67.43	66.13	0.73	67.13	395.03	240.91	102.43	395.03	435.78	424.71	7.88	246.45	432.98	336.00	57.15
TIT-205	Material Thermocouple #3	Deg.F	61.95	63.23	62.54	0.35	62.93	271.58	166.49	62.45	264.75	326.55	299.46	17.53	220.65	310.88	257.29	24.94
TIT-206	Material Thermocouple #4	Deg.F	66.83	69.30	68.32	0.68	69.15	389.70	257.75	88.55	362.33	405.00	396.27	5.58	166.73	362.33	248.18	59.30
TIT-207	Material Thermocouple #5	Deg.F	66.08	69.00	67.88	0.69	69.00	731.78	337.42	120.49	443.18	505.13	491.94	8.12	207.30	443.18	303.03	71.84
an ioi	Combustor Burner Temp. Control	Deg. F	339	1801	1501	376	1777	1827	1804	11	1784	1831	1805	13	1767	1828	1797	12
2 11-147	Fumes Flow	PPH	1969	2530	2388	107	2178	2384	2274	40	2099	2201	2146	16	2146	2545	2369	134
काः।ऽ।	Fumes Pressure	InWC	0.20	0.57	0.49	0.07	0.31	0.51	0.38	0.04	0.26	0.31	0.28	0.01	0.30	0.65	0.48	0.12
(III-145	Combustor Temperature	Deg. F	366	1820	1526	367	1786	1843	1817	11	1794	1847	1817	15	1775	1844	1808	13
HI-133	Fuel Pressure	PSIG	0.05	0.80	0.69	0.20	0.41	0.77	0.56	0.09	0.39	0.50	0.42	0.03	0.41	0.68	0.55	0.08
i izi	Fuel Gas Flow	CFH	269	1104	995	214	627	1073	826	108	621	<i>77</i> 1	652	45	622	969	804	97
CEM					[T.		1		F. 1 1 1			- 51	magar J					J. 184 T
NOx-B	Interconnecting Duct NOx	ppm	-0.48	-0.38	-0.43	0.03	-0.48	122.38	1.32	7.09	0.05	4.58	1.32	0.59	-0.63	80.0	-0.41	0.14
THC-B	Interconnecting Duct THC	ppm	1.53	100.00	5.16	16.21	75.70	100.00	. 93.10	88.8	77.29	100.00	93.90	5.75	0.33	100.00	38.10	45.87
co	Stack's CO	ppm	-0.50	102.00	9.05	25.44	-0.50	-0.50	-0.50	0.00	-0.50	-0.50	-0.50	0.00	-0.50	-0.50	-0.50	0.00
THC	Stack's THC	ppm	-1.28	2.08	-0.93	0.63	-1.4	-1.04	-1.26	0.07	-1.46	-1.18	-1.32	0.05	-1.50	-1.21	-1.35	0,06
NOx	Stack's NOx	ppm	3.10	54.38	39.68	13.35	37.90	102.45	45.29	6.51	43.80	60.78	48.08	4.13	42.60	59.70	48.48	2.97
SO2	Stack SO2	ppm	6.50	7.00	6.54	0.13	6.50	7.00	6.51	0.07	6.50	7.00	6.59	0.19	6.50	7.00	6.55	0.15
O2	Stack's O2	96	11.48	19.60	13.04	1.83	10.60	12.28	11.52	0.25	10.55	12.73	11.71	0.44	11.78	14.05	13.03	0.37
CO2	Stack's CO2	96	0.92	6.06	5.05	1.20	5.56	6.64	6.05	0.17	5.22	6.68	5,92	0,29	4.36	5.9	5.04	0.25
TIT-300	Ambient Temp	Deg. F	64.22	66.20	65.18	0.48	64.58	67.64	66.15	0.71	65.84	68.18	67.29	0.46	67.28	72.1	69.13	1.31



 Date:
 26-Feb-96

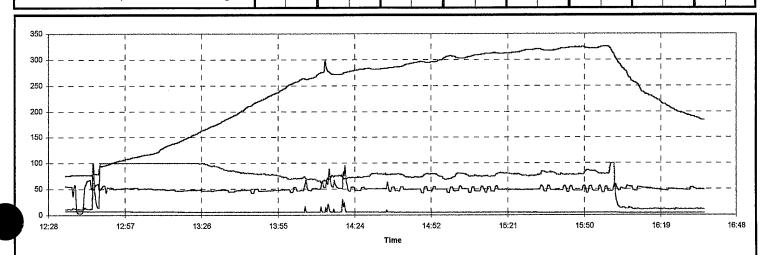
 Time:
 18:40

 Test Number:
 12

 Soak Time:
 1 Hrs.

 Soak Temp:
 Greater than 300 F

			12:35	WA.	RM	12:47	12:47	RA.	MP	14:55	14:55	SO.	AK	16:02	16:02	co	OL	16:41
Tag	Parameter Description	Unit	Min.	Мах.	Ave.	Stđ.	Min.	Max.	Ave.	Stđ.	Min.	Max.	Ave.	Std.	Min.	Мах.	Ave.	Std.
FURNACE																		
P1T-232	Fuel Gas Pressure	In.WC	3.68	7.83	4.03	0.59	5.39	10.84	9.73	1.18	4.20	10.74	10.19	0.93	3.93	4.20	3.99	0.05
FIT-231	Fuel Gas Flow	CFH	-2.13	99.20	0.79	15.21	0.48	132.50	57.84	28.78	-1.73	83.88	67.45	14.28	-1.73	-1.50	-1.64	0.05
PIT-222	Combustion Air Pressure	In.WC	20.77	22.16	20.87	0.19	20.82	22.51	22.20	0.27	21.09	22.52	22.36	0.20	20.97	21.11	21.03	0.03
FfT-221	Combustion Air Flow	CFH	11052	12559	12463	205	10445	12400	10802	357	10502	12461	10684	278	12448	12580	12536	19
PIT-158	Chamber Pressure (Draft)	In.WC	-0.67	0.00	-0.28	0.09	-0.42	-0.13	-0.22	0.02	-0.23	-0.18	-0.20	0.01	-0.29	-0.2	-0.24	0.02
TIT-201	Recorder Temperature	Deg.F	80.48	86.48	81.99	1.72	84.30	363.68	272.51	86.49	300.15	376.43	366.64	8.93	153.68	300.15	195.82	33.94
TIT-202	Furnace Exit Gas Temp (Control)	Deg.F	80.55	86.85	82.23	1.75	84.45	366.45	274.35	87.07	299.10	379.50	368.86	9.30	153.23	299.10	194.67	33.59
TIT-203	Material Thermocouple #1	Deg.F	81.08	86.78	82.51	1.81	85.50	363.08	263.26	91.55	362.03	375.83	371.95	2.57	146.78	362.03	213.54	63.61
TIT-204	Material Thermocouple #2	Deg.F	63.00	64.28	63.57	0.33	64.05	176.93	110.10	35.17	176.93	228.53	205.91	15.35	206.55	228.45	216.23	6.18
TIT-205	Material Thermocouple #3	Deg.F	77.70	79.58	78.34	0.52	79.13	283.13	186.92	67.03	282.83	341.10	317.42	17.93	213.90	325.43	262.50	31.39
TIT-206	Material Thermocouple #4	Deg.F	81.15	87.08	82.37	1.51	84.00	296.18	225.93	66.08	263.10	304.80	299.15	5.72	136.95	263.10	178.51	32.68
TIT-207	Material Thermocouple #5	Deg.F	80.78	88.43	82.23	1.90	84.08	493.88	283.80	92.96	322.65	396.98	385.86	8.87	173.10	322.65	222.69	39.03
				······································				· · · · · · · · · · · · · · · · · · ·									re	
mass:	Combustor Burner Temp. Control	Deg. F	1125	1803	1624	224	1772	1837	1807	10	1776	1837	1804	13	1774	1816	1797	10
PT-149	Fumes Flow	PPH	1122	2962	2290	248	2053	2514	2206	68	2162	2381	2221	19	2345	2539	2467	42
en-151	Furnes Pressure	InWC	-0.06	1.04	0.44	0.16	0.22	0.59	0.33	0.05	0.32	0.51	0.36	0.02	0.50	0.66	0.61	0.04
III-145	Combustor Temperature	Deg. F	1087	1820	1629	244	1780	1854	1819	11	1783	1851	1815	14	1781	1827	1806	10
PIT-133	Fuel Pressure	PSIG	0.00	0.79	0.60	0.31	0.42	0.79	0.53	0.08	0.42	0.52	0.46	0.03	0.47	0.69	0.63	0.05
H-12)	Fuel Gas Flow	CFH	0	1102	838	450	652	1102	809	94	645	795	717	44	727	984	907	57
CEM			,	7 4					PER A	7.77.				, Zjes		. 1. 2		-
NOx-B	Interconnecting Duct NOx	ppm	7.45	8,18	7.79	0.21	5.65	29.80	6.61	1.97	4,75	5.78	5,27	0.27	4.23	4.83	4.43	0.12
THC-B	Interconnecting Duct THC	ppm	10.98	100.00	17.81	18.52	14.19	100.00	84.15	12.60	25.88	100.00	78.45	6.82	10.01	25.88	11.87	1.76
со	Stack's CO	ppm	0.00	98.50	8.79	20.71	0.00	0.50	0.00	0.05	0.00	0.50	0.00	0.04	0.00	0.50	0.00	0.04
THC	Stack's THC	ppm	-2.66	-2.13	-2.43	0.20	-2.9	-2.06	-2.22	0.17	-2.12	-2.01	-2.06	0.02	-2.49	-2.04	-2.29	0.09
NOx	Stack's NOx	ppm	3.40	67.73	44.44	22.00	42.55	95.98	50.52	5.28	43.38	59.13	49.89	3.58	47.28	56.95	50.35	2.15
\$02	Stack SO2	ppm	1.50	1.50	1.50	0.00	0.50	1.50	1.04	0.16	0.50	1.00	1.00	0.03	1.00	1.50	1.03	0.13
02	Stack's O2	96	9.65	18.48	12.30	3.14	9.48	11.38	10.44	0.25	9.98	11.53	10.72	0.35	11.23	12.28	11.61	0.18
CO2	Stack's CO2	%	0.16	4.82	3.42	1.65	3.98	4.90	4.39	0.12	3.88	4.64	4.28	0.17	3.50	4.0	3.86	0.10
TiT-300	Ambient Temp	Deg. F	78.08	81.50	79.71	0.72	77.90	82.40	79.74	1.16	75.56	79.52	77.40	0.98	73,58	76.8	75.36	0.79



 Date:
 27-Feb-96

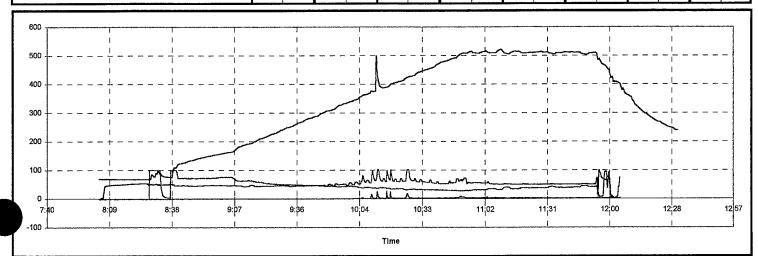
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 15:00

 Test Number:
 13

 Soak Time:
 1 Hrs.

 Soak Temp:
 Greater than 500 F

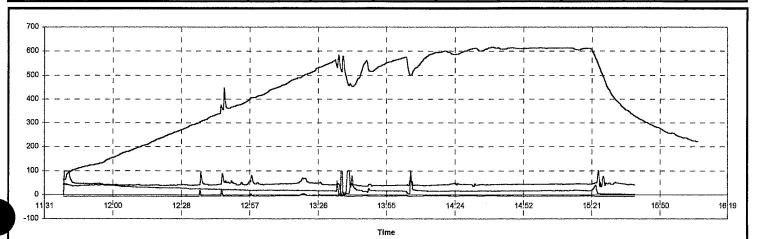
			8:04	WA	RM	8:28	8:28	RA.	MP	10:50	10:50	SO.	AK	11:54	11:54	co	OL	13:03
Tag	Parameter Description	Unit	Min.	Max.	Ave.	Std.	Mîn.	Max.	Ave.	Std.	Min.	Мах	Ave.	Std.	Min.	Мах.	Ave.	Std.
FURNACE																		
PIT-232	Fuel Gas Pressure	In.WC	4.06	11.50	4.21	0.75	4.09	11.87	9.85	1.72	4.30	11.38	10.93	0.45	2.68	11.18	4.12	1.99
FIT-231	Fuel Gas Flow	CFH	-1.38	133.60	2.09	19.66	-1.40	161.68	83.51	38.51	-1.55	149.85	116.18	15.27	-1.75	151.93	6.35	21.55
PIT-222	Combustion Air Pressure	In.WC	21.54	23.25	21.64	0.17	20.85	23.43	23.19	0.44	22.05	23.38	23.29	0.08	21.37	23.30	21.81	0.46
FIT-221	Combustion Air Flow	CFH	10628	12788	12720	214	9913	13464	10430	661	9891	11775	10026	120	9945	12188	11794	509
PIT-158	Chamber Pressure (Draft)	In.WC	-0.37	-0.26	-0.31	0.02	-0.57	-0.15	-0.25	0.04	-0.26	-0.17	-0.21	0.01	-1.00	-0.1	-0.53	0.20
TIT-201	Recorder Temperature	Deg.F	68.63	79.28	69.12	1.07	75.68	561.75	317.23	139.63	531.38	576.38	553.80	10.88	145.43	531.38	254.00	100.27
TIT-202	Furnace Exit Gas Temp (Control)	Deg.F	68.78	78.60	69.23	0.99	76.05	566.18	319.71	140.74	534.90	580.43	557.10	11.34	144.90	534.90	252.59	100.58
TIT-203	Material Thermocouple #1	Deg.F	69.60	77.55	70.19	0.77	77.55	1028.6	328.34	154.67	525.08	594.53	562.17	17.13	127.05	525.08	244.95	111.29
TIT-204	Material Thermocouple #2	Deg.F	69.00	70.35	69.22	0.17	70.35	392.63	225.26	93.77	392.63	430.05	415.44	8.73	182.70	427.80	260.00	70.25
TIT-205	Material Thermocouple #3	Deg.F	69.68	71.10	70.09	0.18	71.10	431.78	227.82	106.73	431.78	514.13	490.39	22.51	216.30	513.45	345.04	90.79
117-206	Material Thermocouple #4	Deg.F	69.45	77.78	70.00	0.81	75.83	473.18	264.07	115.44	464.70	493.73	479.96	5.96	144.75	464.70	247.08	89.63
TIT-207	Material Thermocouple #5	Deg.F	70.13	80.70	70.47	1.05	76.58	626.25	353.03	155.12	574.88	636.83	607.84	13,72	155.25	574.88	279.58	109.21
Mental Circle										, ,			F					
11	Combustor Burner Temp. Control	Deg. F	. 66	1787	1446	524	1777	1836	1808	13	-463	1850	663	11.50	-463	-462	-462	0
and.	Fumes Flow	PPH	2211	2399	2276	46	2124	2460	2197	53	2150	2287	2199	17	1691	3714	3193	433
34 16	Fumes Pressure	InWC	0.42	0.58	0.46	0.04	0.29	0.63	0.36	0.06	0.28	0.33	0.31	0.01	0.07	1.77	1.26	0.44
OH-145	Combustor Temperature	Deg. F	68	1805	1474	521	1786	1852	1821	14	-500	1904	1794	205	1034	1912	1572	297
71.185	Fuel Pressure	PSIG	0.02	0.81	0.74	0.21	0.31	0.80	0.54	0.11	0.00	0.63	0.39	0.06	0.00	0.81	0.57	0.28
EPO).	Fuel Gas Flow	CFH	125	1105	1028	251	552	1102	803	134	1	883	613	62	1	1101	838	341
CEM					N										ļ		lerra e e e	
NOx-B	Interconnecting Duct NOx	ppm	-0.45	-0.23	-0.37	0.04	-0.33	27.00	1.44	2.81	2.93	9.33	3.47	0.87	2.70	3.70	2.98	0.25
THC-B	Interconnecting Duct THC	ppm	-1.57	100.00	3.11	20.09	3.08	100.00	50.94	19.83	27.27	45.83	36.86	4,56	-1.07	100.00	11.36	26.71
со	Stack's CO	ppm	0.00	170.50	9.96	35.68	-0.50	0.50	0.02	0.11	0.00	0.50	0.00	0.03	0.00	321.50	35.60	58.66
THC	Stack's THC	ppm	1.73	62.44	3.71	8.37	1.7	2.57	1.73	0.05	1.71	2.11	1.76	0.04	0.88	38.26	3.21	5.36
NOx	Stack's NOx	ppm	-0,98	54.48	45.44	15.13	43.25	102.28	53.12	10.77	49,70	73.85	53.03	4.57	3.80	96.83	36.41	22.31
\$02	Stack SO2	ppm	1.00	1.50	1.18	0.24	1.00	2.50	1.33	0.38	1.50	2.50	2.06	0.29	2.00	3.00	2.42	0.26
02	Stack's O2	96	10.25	18.45	11.24	2.29	8.50	10.68	10.00	0.38	8.20	11.88	10.03	0.35	7.98	18.18	12.90	2.23
CO2	Stack's CO2	96	0.12	5.90	5.25	1.61	5.62	7.00	6.05	0.25	4.56	7.22	5.93	0.25	0.18	7.4	3.76	1.62
TIT-300	Ambient Temp	Deg. F	62.42	63.50	62.94	0.21	63.14	70.88	66.21	1.82	68.54	69.98	69.09	0.37	69.26	622.6	74.37	33.11



 Date:
 28-Feb-96

 Time:
 17:19

			11:39	WA	RM	11:40	11:40	RA	MP	14:18	14:18	so	AK	15:21	15:21	co	OL	15:54
Tag	Parameter Description	Unit	Min.	Мах.	Ave.	Std.	Min.	Max.	Ave.	Std.	Min.	Max.	Ave.	Std.	Min.	Max.	Ave.	Std.
FURNACE																		
PIT-232	Fuel Gas Pressure	In.WC	3.65	11.04	7.66	1.86	3.81	13.16	10.61	1.48	3.84	11.95	11.42	1.18	3.30	11.54	6.47	3.70
FIT-231	Fuel Gas Flow	CFH	-1.60	146.20	44.33	33.32	-1.40	400.00	110.39	51.96	-1.40	178.55	143.95	27.92	-1.18	130.43	44.33	60.40
PIT-222	Combustion Air Pressure	In.WC	22.16	23.57	22.99	0.38	22.39	23.91	23.57	0.26	22.46	24.05	23.89	0.22	22.50	24.09	23.11	0.69
FIT-221	Combustion Air Flow	CFH	10147	12070	11028	491	9919	12097	10241	390	9972	12106	10106	307	10109	12278	11462	989
PIT-158	Chamber Pressure (Draft)	In.WC	-0.39	-0.15	-0.31	0.05	-0.43	-0.08	-0.25	0.05	-0.45	-0.21	-0.36	0.05	-0.97	-0.3	-0.44	0.10
TIT-201	Recorder Temperature	Deg.F	64.65	131.03	104.48	23.17	131.03	672.45	414.84	159.84	515.78	682.28	652.52	33.32	189.75	668.78	430.81	191.24
TIT-202	Furnace Exit Gas Temp (Control)	Deg.F	65.10	132.53	105.60	23.59	132.53	677.63	418.35	161.10	515.93	687.38	657,14	33.69	188.93	672.75	431.06	193.84
TIT-203	Material Thermocouple #1	Deg.F	66.30	119.85	99.06	18.40	119.85	646.0	385.23	154.41	546.90	657.75	624.75	30.22	150.15	651.30	408.80	202.79
TIT-204	Material Thermocouple #2	Deg.F	65.33	98.33	84.13	12.30	98.33	408.60	261.24	97.10	395.25	497.85	458.57	28.91	241.73	512.55	389.16	102.58
TIT-205	Material Thermocouple #3	Deg.F	65.25	75.53	69.27	3.38	75.53	540.23	308.62	152.64	532.58	629.03	591.90	30.22	275.18	632.85	497.61	131.62
TIT-206	Material Thermocouple #4	Deg.F	65.33	116.48	99.96	17.90	116.48	588.98	343.82	134.51	413.55	594.30	557.34	34.92	134.10	582.90	345.51	185.92
TIT-207	Material Thermocouple #5	Deg.F	66.53	143.33	116.19	27.66	143.33	923.70	457.77	177.60	543.30	741.60	703.15	33.79	202.50	711.08	455.20	203.08
1													F 200 200 3				,	
TE-IST	Combustor Burner Temp. Control	Deg. F	-463	-462	-462	0	-463	-462	-462	0	-463	-462	-462	0	-463	-462	-462	0
erit.	Fumes Flow	PPH	2301	2412	2341	25	2069	2713	2238	97	2100	2705	2204	94	2081	3411	2753	510
m.151	Furnes Pressure	InWC	0.47	0.59	0.52	0.03	0.22	0.69	0.37	0.08	0.25	0.72	0.33	0.06	0.27	1.54	0.88	0.48
(II-145	Combustor Temperature	Deg. F	1811	1853	1832	14	1282	1873	1831	69	1801	1874	1833	15	1786	1907	1829	15
garasi	Fuel Pressure	PSIG	0.71	0.78	0.74	0.03	0.00	0.82	0.51	0.13	0.29	0.53	0.38	0.05	0.33	0.83	0.62	0,23
CEM	Fuel Gas Flow	CFH	1007	1078	1041	32	1	1097	765	167	493	781	601	45	547	1099	866	250
NOx-B	Interconnecting Duct NOx	ppm	-5.65	-5.39	-5.46	0.09	-5.48	23.08	-3.93	2.55	-5.35	-3.15	-3.69	0.34	-5.98	-3.48	-5.13	0.97
THC-B	Interconnecting Duct THC	ppm	2.18	100.00	70.45	27.21	3.84	100.00	26.28	11.43	5.44	100.00	17.18	6.81	2.44	40.31	8.80	8.02
со	Stack's CO	ppm	-0.50	0.50	0.00	0.15	-0.50	497.00	5.71	47.75	-0.50	0.50	0.04	0.15	0.00	0.50	0.06	0.16
тнс	Stack's THC	ppm	-0.72	-0.14	-0.68	0.12	-0.8	100.00	-0.04	6.76	-0.77	0.24	-0.71	0.07	-0.78	-0.43	-0.73	0.03
NOx	Stack's NOx	ppm	36.70	45.85	40.86	2.91	-0.58	102.10	44.57	10.77	36.05	60.30	42.76	3.27	34.33	102.55	44.84	5,89
SO2	Stack SO2	ppm	2.00	2.50	2.02	0.10	2.00	2.50	2.02	0.10	1.50	2.50	2.00	0.05	2.00	2.50	2.16	0.23
O2	Stack's O2	96	10.90	12.05	11.58	0.28	8.98	18.83	11.01	1.06	10.10	13.50	10.82	0.48	10.88	14.83	12.31	1.00
CO2	Stack's CO2	95	5.46	6.18	5.76	0.19	1.08	7.06	6.10	0.69	4.48	6.68	6.24	0.30	3.68	6.2	5.26	0.69
TIT-300	Amblent Temp	Deg. F	59.72	61.52	60.34	0.44	57.74	63.14	60.41	1.26	55.40	60.44	57.43	0.95	52.70	55.8	54.32	0.76



 Date:
 1-Mar-96

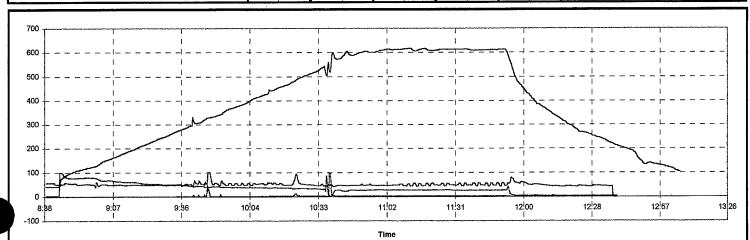
 Time:
 15:00

 Test Number:
 15

 Soak Time:
 1 Hrs.

 Soak Temp:
 Greater than 600 F

	<u> </u>															 		
			8:39	WA.	RM	8:44	8:44	RA.	MP	10:51	10:51	SO.	1K	11:52	11:52	co	OL	13:14
Tag	Parameter Description	Unit	Min.	Мах.	Ave.	Std.	Min.	Мах.	Ave.	Std.	Min.	Мах.	Ave.	Std.	Min.	Мах.	Ave.	Std.
FURNACE																		
PH-232	Fuel Gas Pressure	In.WC	3.90	11.02	4.46	1.73	4.54	13.69	11.46	1.15	10.92	12.49	12.13	0.19	3.70	10.92	7.76	1.58
FIT-231	Fuel Gas Flow	CFH	-0.58	108.08	5.97	23.79	-0.60	400.00	116.48	52.14	79.63	174.55	145.15	13.12	-0.90	79.63	-0.38	5.30
PIT-222	Combustion Air Pressure	In.WC	23.50	24.92	23.63	0.34	23.43	24.95	24.82	0.15	24.50	24.92	24.74	0.09	18.11	24.50	19.06	1.73
FiT-221	Combustion Air Flow	CFH	10569	12467	12308	450	10066	12177	10426	322	10123	10452	10173	30	10452	16663	15896	1528
PIT-158	Chamber Pressure (Draft)	In.WC	-0.45	-0.21	-0.33	0.05	-0.52	-0.12	-0.23	0.03	-0.24	-0.20	-0.21	0.01	-0.76	0.0	-0.30	0.25
TIT-201	Recorder Temperature	Deg.F	41.63	62.55	42.73	4.27	62.55	711.38	401.35	179.30	644.70	683.70	667.24	8.38	73.73	644.70	224.45	121.83
TIT-202	Furnace Exit Gas Temp (Control)	Deg.F	41.70	62.78	42.93	4.27	62.78	719.70	406.53	182.53	651.60	694.05	675.81	9.46	73.20	651.60	223.22	121.17
TIT-203	Material Thermocoupte #1	Deg.F	42.60	62.33	43.77	4.00	62.33	673.7	369.50	170.80	603.00	652.20	631.74	10.88	69.45	615.75	254.33	146.02
TIT-204	Material Thermocouple #2	Deg.F	42.00	46.95	42.43	0.97	46.95	536.03	284.71	129.66	536.03	568.73	555.22	7.80	66.08	558.23	270.24	104.37
TIT-205	Material Thermocouple #3	Deg.F	42.45	47.25	42.78	0.96	47.25	514.73	258.87	132.68	514.73	615.75	585.65	28.37	65.55	615.23	312.97	149.60
TIT-206	Material Thermocoupte #4	Deg.F	42.23	66.38	43.61	4.95	66.38	579.23	328.70	152.05	559.13	5 87.25	575.23	6.96	63.90	559.13	216.88	116.35
TIT-207	Material Thermocouple #5	Deg.F	42.83	70.43	44.22	5.61	70.43	830.40	437.30	194.14	674.55	735.08	710.59	17.86	64.80	674.55	213.05	129.13
ATTEMP													<u> </u>					1. F. 2. 1
(111-131	Combustor Burner Temp. Control	Deg. F	1797	1828	1817	- 11	1797	1850	1835	. 11	1807	1850	1833	13	181	1850	1203	690
PII-149	Fumes Flow	PPH	2165	2384	2243	68	2001	2501	2126	66	2163	2238	2194	14	2188	4000	3580	404
PII-151	Fumes Pressure	InWC	0.44	0.60	0.51	0.06	0.28	0.57	0.34	0.03	0.32	0.35	0.33	0.01	0.35	2.47	1.76	0.50
TR-145	Combustor Temperature	Deg. F	1802	1836	1823	12	1802	1882	1840	14	1808	1875	1839	17	152	1879	1183	711
PII-133	Fuel Pressure	PSIG	0.82	0.84	0.82	0.01	0.42	0.84	0.53	0.10	0.30	0.45	0.36	0.03	0.00	0.85	0.44	0.40
H-121	Fuel Gas Flow	CFH	1091	1100	1092	3	606	1100	758	119	479	656	581	49	1	1097	569	530
CEM																		3.5
NOx-B	Interconnecting Duct NOx	ppm	1.13	1.20	1.15	0.02	1.15	51.08	2.85	3.40	2.78	3.83	3.20	0.22	1.00	2.78	1.11	0.17
THC-B	Interconnecting Duct THC	ppm	3.47	100,00	7.64	19.67	5.94	100.00	48.25	17.69	25.29	31.96	27.35	0.84	3.14	42.72	4.32	3.72
со	Stack's CO	ppm	0.00	0.00	0.00	0.00	-0.50	0.50	-0.01	0.11	-0.50	0.50	-0.02	0.18	-0.50	24.50	0.51	1.86
THC	Stack's THC	ppm	-0.16	-0.02	-0.11	0.03	-0.3	0.06	-0.20	0.04	-0.27	0.14	-0.23	0.04	-0.24	29.42	0.72	2.45
NOx	Stack's NOx	ppm	50.75	58.08	55.18	3.08	40.08	102.50	52.24	7.35	43.25	58.18	49.81	3.89	-0.98	81.23	26.30	25.26
SO2	Stack SO2	ppm	1.50	2.00	1.54	0.14	1.50	2.00	1.85	0.23	1.50	2.50	2.01	0.09	1.50	2.50	2.00	0.08
O2	Stack's O2	96	10.33	10.80	10.49	0.20	6.60	11.18	9.59	0.51	8.43	10.88	9.71	0.49	9.90	18.40	14.77	3.21
CO2	Stack's CO2	96	5.50	5.86	5.73	0.15	5.16	8.66	6.35	0,35	5.40	7.16	6.24	0.35	0.06	6.1	2.59	2.27
TIT-300	Ambient Temp	Deg. F	37.40	37.94	37.77	0.14	37.76	44.06	39.74	1.23	40.46	44.78	42.35	0.95	41.72	44.8	42.94	0.57



APPENDIX H

SOURCE EMISSIONS DATA SUMMARY SHEETS FOR TEST RUNS 1-3

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA HOT GAS TEST PROGRAM SUMMARY OF CEM PARAMETERS

				Furnace O	nace Outlet Duct			W	Afterburner Discharge Stack	scharge Sta	ck	
			NO,	7,	the OHL	(0)	YON.	¥	THC #	(#)	SO,	
Per Rest	Run Test Date Period	Test Period	Concentra- tion (ppm/v)	Mass ⁽²⁾ Rate (lb/br)	Concentra- Mass ⁽²⁾ tion Rate (ppm/v) (lb/hr)		Concentra- Mass ⁽²⁾ Concentra- Mass ⁽²⁾ tion Rate tion Rate (ppm/v) (lb/hr) (ppm/v) (lb/hr)	Mass ⁽²⁾ Rate (Ib/hr)	Concentra- tion (ppm/v)	Mass ⁽²⁾ Rate (1b/hr)	Concentra- tion (ppm/v)	Mass ⁽²⁾ Rate (1b/hr)
T1	T1 1/31/96 - 1831-0122 2/1/96	1831-0122		<4.9x10 ⁻³	12.6	0.059	35.4	0.27	<1	<7.2x10 ⁻³	<1	<0.01
T2	2/2/96	2/2/96 1404-2043	1.9	7.8x10 ⁻³	50.7	0.19	59.6	0.44	<1	<6.8x10 ³	<1	< 0.01
T3	2/4/96	2/4/96 1408-2049	4.2	1.6x10 ⁻²	79.7	0.29	63.3	0.43	1.3	8.6x10 ⁻³	1.0	0.000

Total hydrocarbon concentrations and mass rates are calculated on a dry basis (as propane). Ξ

Mass rates calculated using volumetric airflows measured on the isokinetic sampling trains. 3

	Overall Hot C	Gas System Removal Efficiency ⁽¹⁾	Efficiency (1)	Afterbo	Afterburner Removal Efficiency (2)	ency (2)
	Test Run #1.	Test Run #2	Test Run #3	Test Run 1	Test Run 2	Test Run 3
Date	31 Jan 96	2 Feb 96	4 Feb 96	31 Jan 96	2 Feb 96	4 Feb 96
Time				1832-0122	1405-2100	1406-2036
Explosive Removal Efficiency (%)						
2,4,6 - Trimitrotoluene (TNT)	>99.997	> 99.95	> 99.94	>99.97	> 99.86	>99.86
Tetryl	> 99.79	>99.92	>99.94	>84.91	> 79.09	>67.15
RDX	>99.88	>99.97	>99.91	>98.30	>99.00	>97.68

- Based on total explosives introduced to furnace converted to lb/hr (using total test times) and afterburner discharge mass rate determination for each explosive. Ξ
- Afterburner removal efficiency based on the following: % RE = AFT IN AFT OUT x 100 AFT IN 3
- All removal efficiencies reported as greater than since no explosives were measured above the method detection limit at the afterburner discharge. NOTES:

TRIANGLE LABORATORY SEMI-VOLATILE DATA

TEST DATA					
Run number		T 1		T2	FIELD BLANK (1)
Location			AFIERBUR		
Date		01-31-96		02-02-96	0 2-04-9 6
Time period		1834-0110		1406-2031	
SEMI-VOLATILE ORGANICS LABORATORY RE	PORT DA	TA, ug			
Phenol		4.36		8.01	9.08
Bis (2-chloroethyl) ether	ND<	4.00	ND<	3.81	
2-Chlorophenol	ND<	2.40	ND<	2.29	
1,3-Dichlorobenzene	ND<	2.04	ND<	1.94	
1,4-Dichlorobenzene	ND<	1.95	ND<	1.86	
Benzyl Alcohol		378.52		1521.61	2515.21
1,2-Dichlorobenzene	ND<	2.09	ND<	1.99	
2-Methylphenol	ND<	3.82 4.11	ND<	3.64 3.92	
bis (2-Chloroisopropyl) ether	ND<	3.76	ND<	3.59	
4-Methylphenol n-Nitroso-di-n-propylamine	ND<	5.05	ND<	4.82	
Hexachloroethane	ND<	4.09	ND<	3.89	
Nitrobenzene	ND<	2.53	ND<	2.52	
Isophorone	ND<	1.42	ND<	1.42	
2-Nitrophenol	ND<	3.70	ND<	3.68	
2,4-Dimethylphenol	ND<	3.12	ND<	3.10	
Benzoic acid		50.02		66.93	48.28
Bis (2-chloroethoxy)-methane	ND<	3.16	ND<	3.14	
2,4-Dichlorophenol	ND<	2.66	ND<	2.64	
1,2,4-Trichlorobenzene	ND<	2.16 1.34	ND<	2.15 1.63	1.64
Naphthalene	ND<	2.05	ND<	2.04	1.04
4-Chloroanaline Hexachlorobutadiene	ND<	2.60	ND<	2.59	
4-chloro-3-methylphenol	ND<		ND<	3.23	
2-Methylnaphthalene	ND<		ND<	1.25	
Hexachlorocyclopentadiene	ND<	2.34	ND<	2.30	
2,4,6-Trichlorophenol	ND<		ND<	2.87	
2,4,5-Trichlorophenol	ND<		ND<	2.78	
2-Chloronaphthalene	ND<		ND<	1.15	
2-Nitroaniline	ND<		ND<	4.25 0.95	
Dimethylphthalate	ND<		ND<	0.74	
Acenaphthylene	ND<		ND×	4.07	
2,6-Dinitrotoluene 3-Nitroaniline	ND<		ND<	3.69	
Aceraphthene	ND<		ND<	1.32	
2,4-Dinitrophenol	ND<		ND<	8.39	
4-Nitrophenol	ND<		ND<	3.99	
Dibenzofuran	ND<		ND<	0.77	
2,4-Dinitrotoluene	ND<	2.69	ND<	2.65	
Diethylpthalate		7.80		3.61	1.29
4-Chlorophenyl-phenyl ether	ND<		ND<	1.83	
Fluorene	ND<		ND<	1.00	
4-Nitroaniline	ND<		ND<	3.62 4.44	
4.6-Dinitro-2-methylphenol	ND<		ND<	1.43	
n-Nitrosodiphenylamine 4-Bromophenyl-phenyl ether	ND<		ND<	2.06	
Hexachlorobenzene	ND<		ND<	1.47	
Pentachlorophenol	ND<		ND<	2.57	
Phenanthrene	ND<		ND<	0.56	
Anthracene		0.35	ND<	0.57	
Di-n-butylphthalate		21.48		15.26	8.30
Fluoranthene	ND<		ND<	0.43	
Pyrene	ND<		ND<	0.30	
Butylbenzylphthalate		0.39	ND<	0.53	
3,3 Dichlorobenzidine	ND<		ND<	0.85 0.32	
Benzo(a)anthracene	ND<		ND<	0.34	
Chrysene bis(2-Ethylhexyl)phthalate	MIX	16.27	1110	18.01	4.49
Di-n-octylphthalate	ND<		ND<	0.28	
Benzo(b)fluoranthene	ND<			0.39	
Benzo(k)fluoranthene	ND<			0.40	
Benzo(a)pyrene	ND<	0.35	ND<	0.40	
Indeno(1,2,3-cd)pyrene	ND<			0.40	
Dibenzo(a,h)anthracene	ND<			0.53	
Benzo(g,h,i)perylene	ND<	0.42	ND<	0.47	

⁽¹⁾ Detected values only; all other compounds ND<, Note: Data not available for test T3.

"ND<(....)" = Analyte detection limit value,

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA

HOT GAS TEST PROGRAM SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS

TRIANGLE LABORATORY SEMI-VOLATILE DATA

TEST DATA					
Run number		Ti		T2	
Location		AFTERBURNE			
Date		01 -3 1-96		02-02-96	
Time period		1834-0110	1406-2031		
SEMIVOLATILE ORGANICS CONCENTRATIONS, E	re/dscr	n			
Phenol	-	0.85		1.58	
Bis (2-chloroethyl) ether	ND<		ND<	0.75	
2-Chlorophenol	ND<		ND<	0.45	
1,3-Dichlorobenzene	ND<		ND<	0.38	
1,4-Dichlorobenzene	ND<	0.38 73.49	ND<	0.37 300.72	
Benzyl Alcohol	ND<		ND<	0.39	
1,2-Dichlorobenzene	ND<		ND<	0.72	
2-Methylphenol bis (2-Chloroisopropyl) ether	ND<		ND<	0.77	
4-Methylphenol	ND<	0.73	ND<	0.71	
n-Nitroso-di-n-propylamine	ND<		ND<	0.95	
Hexachloroethane	ND<		ND<	0.77	
Nitrobenzene	ND<		ND<	0.50	
Isophorone	ND<		ND<	0.28 0.73	
2-Nitrophenol	ND<		ND<	0.73	
2,4-Dimethylphenol	IND	9.71	110	13.23	
Benzoic acid Bis (2-chloroethoxy)-methane	ND<		ND<	0.62	
2,4-Dichlorophenol	ND<		ND<	0.52	
1,2,4-Trichlorobenzene	ND<	0.42	ND<	0.42	
Naphthalene		0.26		0.32	
4-Chloroanaline	ND<		ND<	0.40	
Hexachlorobutadiene	ND<		ND<	0.51 0.64	
4-chloro-3-methylphenol	ND<		ND<	0.25	
2-Methylmaphthalene	ND<		ND<	0.45	
Hexachlorocyclopentadiene 2,4,6-Trichlorophenol	ND<		ND<	0.57	
2,4,5-Trichlorophenol	ND<		ND<	0.55	
2-Chloronaphthalene	ND<	0.23	ND<	0.23	
2-Nitroaniline	ND<		ND<	0.84	
Dimethylphthalate	ND<		ND<	0.19	
Acenaphthylene	ND<		ND<	0.15 0.80	
2,6-Dinitrotoluene	ND<		ND<	0.73	
3-Nitroaniline	ND-		ND<	0.26	
Acenaphthene 2,4-Dinitrophenol	ND		ND<	1.66	
4-Nitrophenol	ND<	< 0.79	ND<	0.79	
Dibenzofuran	ND		ND<	0.15	
2,4-Dinitrotoluene	ND		ND<	0.52	
Diethylpthalate		1.51	NTC -	0.71	
4-Chlorophenyl-phenyl ether	ND:		ND<	0.36 0.20	
Fluorene	ND		ND<	0.72	
4-Nitroaniline 4,6-Dinitro-2-methylphenol	ND		ND<	0.88	
n-Nitrosodiphenylamine	ND		ND<	0.28	
4-Bromophenyl-phenyl ether	ND	< 0.42	ND<	0.41	
Hexachlorobenzene	ND		ND<	0.29	
Pentachlorophenol	ND		ND<	0.51	
Phenanthrene	ND	< 0.11 0.07	ND<	0.11 0.11	
Anthracene		4.17	NL.	3.02	
Di-n-butylphthalate Fluoranthene	ND		ND<	0.08	
Pyrene	ND		ND<	0.06	
Butylbenzylphthalate		0.08	ND<	0.10	
3,3'-Dichlorobenzidine	ND		ND<	0.17	
Benzo(a)anthracene	ND		ND<	0.06	
Chrysene	ND-	< 0.07 3.16	ND<	0.07 3.56	
bis(2-Ethylhexyl)phthalate	ND-		ND<	0.06	
Di-n-octylphthalate	ND		ND<	0.08	
Benzo(b)fluoranthene Benzo(k)fluoranthene	ND		ND<	0.08	
Benzo(a)pyrene	ND		ND<	0.08	
Indeno(1,2,3-cd)pyrene	ND		ND<	0.08	
Dibenzo(a,h)anthracene	ND		ND<	0.10	
Benzo(g,h,i)perylene	ND	< 0.08	ND<	0.09	

"ND<(....)" = Analyte detection limit value.

TRIANGLE LABORATORY SEMI-VOLATILE DATA

TEST DATA		
Run number	T1	T2
Location		ER DISCHARGE
Date	01 -3 1 -9 6 1834-0110	02-02-96 1406-2031
Time period	1654-0110	1400 2031
SEMIVOLATTLE ORGANICS CONCENTRATIONS, I	b/dscf	
Phenol	5.29E-11	9.88 E-1 1
Bis (2-chloroethyl) ether	ND< 4.85E-11	ND< 4.70E-11
2-Chlorophenol	ND< 2.91E-11	ND< 2.83E-11
1,3-Dichlorobenzene	ND< 2.47E-11 ND< 2.36E-11	ND< 2.39E-11 ND< 2.30E-11
1,4-Dichlorobenzene	4.59E-09	1.88E-08
Benzyl Alcohol 1,2-Dichlorobenzene	ND< 2.53E-11	ND< 2.46E-11
2-Methylphenol	ND< 4.63E-11	ND< 4.49E-11
his (2-Chloroisopropyl) ether	ND< 4.98E-11	ND< 4.84E-11
4-Methylphenol	ND< 4.56E-11	ND< 4.43E-11
n-Nitroso-di-n-propylamine	ND< 6.12E-11	ND< 5.95E-11 ND< 4.80E-11
Hexachloroethane	ND< 4.96E-11 ND< 3.07E-11	ND< 3.11E-11
Nitrobenzene Isophorone	ND< 1.72E-11	ND< 1.75E-11
2-Nitrophenol	ND< 4.49E-11	ND< 4.54E-11
2.4-Dimethylphenol	ND< 3.78E-11	ND< 3.83E-11
Benzoic acid	6.06E-10	8.26E-10
Bis (2-chloroethoxy)-methane	ND< 3.83E-11	ND< 3.87E-11
2.4-Dichlorophenol	ND< 3.22E-11 ND< 2.62E-11	ND< 3.26E-41 ND< 2.65E-41
1,2,4-Trichlorobenzene	ND< 2.62E-11 1.62E-11	2.01E-11
Naphthalene 4-Chloroanaline	ND< 2.49E-11	ND< 2.52E-11
Hexachlorobutadiene	ND< 3.15E-11	ND< 3.20E-11
4-chloro-3-methylphenol	ND< 3.94E-11	ND< 3.99E-11
2-Methylmaphthalene	ND< 1.53E-11	ND< 1.54E-11
Hexachlorocyclopentadiene	ND< 2.84E-11	ND< 2.84E-11 ND< 3.54E-11
2,4,6-Trichlorophenol	ND< 3.54E-11 ND< 3.42E-11	ND< 3.43E-11
2,4,5-Trichlorophenol 2-Chloronaphthalene	ND< 1.42E-11	ND< 1.42E-11
2-Nitroaniline	ND< 5.24E-11	ND< 5.24E-11
Dimethylphthalate	ND< 1.16E-11	ND< 1.17E-11
Acenaphthylene	ND< 9.09E-12	ND< 9.13E-12
2,6-Dinitrotoluene	ND< 5.01E-11 ND< 4.56E-11	ND< 5.02E-11 ND< 4.55E-11
3-Nitroaniline	ND< 1.62E-11	ND< 1.63E-11
Aceraphthene 2,4-Dinitrophenol	ND< 1.03E-10	ND< 1.04E-10
4-Nitrophenol	ND< 4.91E-11	ND< 4.92E-11
Dibenzofuran	ND< 9.46E-12	ND< 9.50E-12
2,4-Dinitrotoluene	ND< 3.26E-11	ND< 3.27E-11
Diethylpthalate	9.46E-11	4.45E-11 ND< 2.26E-11
4-Chlorophenyl-phenyl ether	ND< 2.25E-41 ND< 1.24E-41	ND< 1.23E-11
Fluorene 4-Nitroaniline	ND< 4.46E-11	ND< 4.47E-11
4,6-Dinitro-2-methylphenol	ND< 5.64E-11	ND< 5.48E-11
n-Nitrosodiphenylamine	ND< 1.82E-11	ND< 1.76E-11
4-Bromophenyl-phenyl ether	ND< 2.61E-11	ND< 2.54E-11
Hexachlorobenzene	ND< 1.87E-11	ND< 1.81E-11
Pentachlorophenol	ND< 3.26E-11 ND< 7.15E-12	ND< 3.17E-11 ND< 6.91E-12
Phenanthrene Anthracene	4.24E-12	ND< 7.03E-12
Di-n-butylphthalate	2.60E-10	1.88E-10
Fluoranthene	ND< 5.46E-12	ND< 5.31E-12
Pyrene	ND< 4.00E-12	ND< 3.70E-12
Butylbenzylphthalate	4.73E-12	ND< 6.54E-12
3,3'-Dichlorobenzidine	ND< 1.14E-11 ND< 4.24E-12	ND< 1.05E-11 ND< 3.95E-12
Benzo(a)anthracene Chrysene	ND< 4.61E-12	ND< 4.20E-12
bis(2-Ethylhexyl)phthalate	1.97E-10	2.22E-10
Di-n-octylphthalate	ND< 3.03E-12	ND< 3.45E-12
Benzo(b)fluoranthene	ND< 4.12E-12	ND< 4.81E-12
Benzo(k)fluoranthene	ND< 4.24B-12	ND< 4.94E-12
Benzo(a)pyrene	ND< 4.24E-12 ND< 4.36E-12	ND< 4.94E-12 ND< 4.94E-12
Indeno(1,2,3-cd)pyrene Dibenzo(a h)anthracene	ND< 4.36E-12 ND< 5.82E-12	ND< 4.94E-12 ND< 6.54E-12
Dibenzo(a,h)anthracene Benzo(g,h,i)perylene	ND< 5.09E-12	ND< 5.80E-12

[&]quot;ND<(....)" = Analyte detection limit value.

TRIANGLE LABORATORY SEMI-VOLATILE DATA

TEST DATA		
Run number	Ti	T2
Location	AFTERBURN	IER DISCHARGE
Date	01 -3 1-96	02-02-96
Time period	1834-0110	1406-2031
SEMIVOLATILE ORGANICS EMISSION RESULTS,	lb/hr	
Phenol	3.50E-06	6.29E-06
Bis (2-chloroethyl) ether	ND< 3.21E-06	ND< 2.99E-06
2-Chlorophenol	ND< 1.93E-06	ND< 1.80E-06
1,3-Dichlorobenzene	ND< 1.64E-06	ND< 1.52E-06 ND< 1.46E-06
1,4-Dichlorobenzene	ND< 1.57E-06 3.04E-04	1.19E-03
Benzyl Alcohol	ND< 1.68E-06	ND< 1.56E-06
1,2-Dichlorobenzene 2-Methylphenol	ND< 3.07E-06	ND< 2.86E-06
bis (2-Chloroisopropyl) ether	ND< 3.30E-06	ND< 3.08E-06
4-Methylphenol	ND< 3.02E-06	ND< 2.82E-06
n-Nitroso-di-n-propylamine	ND< 4.05E-06	ND< 3.78E-06
Hexachloroethane	ND< 3.28E-06	ND< 3.05E-06
Nitrobenzene	ND< 2.03E-06	ND< 1.98E-06
Isophorone	ND< 1.14E-06	ND< 1.11E-06
2-Nitrophenol	ND< 2.97E-06	ND< 2.89E-06
2.4-Dimethylphenol	NID< 2.50E-06	ND< 2.43E-06
Benzoic acid	4.01E-05 ND< 2.54E-06	5.25E-05 ND< 2.47E-06
Bis (2-chloroethoxy)-methane	ND< 2.13E-06	ND< 2.07E-06
2,4-Dichlorophenol 1,2,4-Trichlorobenzene	ND< 1.73E-06	ND< 1.69E-06
Naphthalene	1.08E-06	1.28E-06
4-Chloroanaline	ND< 1.65E-06	ND< 1.60E-06
Hexachlorobutadiene	ND< 2.09E-06	ND< 2.03E-06
4-chloro-3-methylphenol	ND< 2.61E-06	ND< 2.54E-06
2-Methylnaphthalene	ND< 1.01E-06	ND< 9.81E-07
Hexachlorocyclopentadiene	ND< 1.88E-06	ND< 1.81E-06
2,4,6-Trichlorophenol	ND< 2.34E-06	ND< 2.25E-06 ND< 2.18E-06
2,4,5-Trichlorophenol	ND< 2.26E-06 ND< 9.39E-07	ND< 9.03E-07
2-Chloronaphthalene 2-Nitroaniline	ND< 3.47E-06	ND< 3.34E-06
Dimethylphthalate	NID< 7.70E-07	ND< 7.46E-07
Acemphthylene	ND< 6.02E-07	ND< 5.81E-07
2,6-Dinitrotoluene	ND< 3.31E-06	ND< 3.20E-06
3-Nitroaniline	ND< 3.02E-06	ND< 2.90E-06
Acenaphthene	ND< 1.08E-06	ND< 1.04E-06
2,4-Dinitrophenol	ND< 6.85E-06	ND< 6.59E-06
4-Nitrophenol	ND< 3.25E-06	ND< 3.13E-06
Dibenzofuran	ND< 6.26E-07	ND< 6.05E-07 ND< 2.08E-06
2,4-Dinitrotoluene	ND< 2.16E-06 6.26E-06	ND< 2.08E-06 2.83E-06
Diethylpthalate 4-Chlorophenyl-phenyl ether	ND< 1.49E-06	ND< 1.44E-06
Fluorene	ND< 8.19E-07	ND< 7.85E-07
4-Nitroaniline	ND< 2.95E-06	ND< 2.84E-06
4,6-Dinitro-2-methylphenol	ND< 3.73E-06	ND< 3.49E-06
n-Nitrosodiphenylamine	ND< 1.20E-06	ND< 1.12E-06
4-Bromophenyl-phenyl ether	ND< 1.73E-06	ND< 1.62E-06
Hexachlorobenzene	ND< 1.24E-06	ND< 1.15E-06
Pentachlorophenol	ND< 2.16E-06 ND< 4.74E-07	ND< 2.02E-06 ND< 4.40E-07
Phenanthrene	2.81E-07	ND< 4.48E-07
Anthracene Di-n-butylphthalate	1.72E-05	1.20E-05
Fluoranthene	ND< 3.61E-07	ND< 3.38E-07
Pyrene	ND< 2.65E-07	ND< 2.36E-07
Butylbenzylphthalate	3.13E-07	ND< 4.16E-07
3,3'-Dichlorobenzidine	ND< 7.54E-07	ND< 6.67E-07
Benzo(a)anthracene	ND< 2.81E-07	ND< 2.51E-07
Chrysene	ND< 3.05E-07	ND< 2.67E-07
bis(2-Ethylhexyl)phthalate	1.31E-05	1.41E-05
Di-n-octylphthalate	ND< 2.01E-07	NID< 2.20B-07
Benzo(b)fluoranthene	ND< 2.73E-07 ND< 2.81E-07	ND< 3.06E-07 ND< 3.14E-07
Benzo(k)fluoranthene	ND< 2.81E-07	ND< 3.14E-07
Benzo(a)pyrene Indeno(1,2,3-od)remene	ND< 2.89E-07	ND< 3.14E-07
Indeno(1,2,3-cd)pyrene Dibenzo(a,h)anthracene	ND< 3.85E-07	ND< 4.16E-07
Benzo(g,h,i)perylene	ND< 3.37E-07	ND< 3.69E-07
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"ND<(....)" = Analyte detection limit value.

TRIANGLE LABORATORY SEMI-VOLATILE DATA

TEST DATA				
Run number		T1		T2
Location		AFTERBUR	NER DISCH	
Date		01 -3 1-96		-02-96
Time period		1834-0110	140	6-2031
SEMIVOLATILE ORGANICS CONCENTRATIONS,	ppb/v			
Phenol		0.22		0.40
Bis (2-chloroethyl) ether	ND<	0.13	ND<	0.13
2-Chlorophenol	ND<	0.09	ND< ND<	0.08
1,3-Dichlorobenzene	ND<	0.06 0.06	ND<	0.06
1,4-Dichlorobenzene	ND<	16.351	NL.	66.90
Benzyl Alcohol 1,2-Dichlorobenzene	ND<	0.07	ND<	0.06
2-Methylphenol	ND<	0.17	ND<	0.16
bis (2-Chloroisopropyl) ether	ND<	0.11	ND<	0.11
4-Methylphenol	ND<	0.16	ND<	0.16
n-Nitroso-di-n-propylamine	ND<	0.18	ND<	0.18
Hexachloroethane	ND<	0.08	ND<	0.08
Nitrobenzene	ND<	0.10	ND<	0.10
Isophorone	ND<	0.05	ND<	0.05
2-Nitrophenol	ND<	0.12	ND<	0.13 0.12
2,4-Dimethylphenol	ND<	0.12 1.91	ND<	2.61
Benzoic acid	ND<	0.09	ND<	0.09
Bis (2-chloroethoxy)-methane	ND<	0.08	ND<	0.08
2,4-Dichlorophenol 1,2,4-Trichlorobenzene	ND<	0.06	ND<	0.06
Naphthalene		0.05		0.060
4-Chloroanaline	ND<	0.08	ND<	80.0
Hexachlorobutadiene	ND<	0.05	ND<	0.05
4-chloro-3-methylphenol	ND<	0.11	ND<	0.11
2-Methylnaphthalene	ND<	0.041	ND<	0.042
Hexachlorocyclopentadiene	ND<	0.04 0.07	ND<	0.04 0.07
2,4,6-Trichlorophenol	ND<	0.07	ND<	0.07
2,4,5-Trichlorophenol 2-Chloronaphthalene	ND<	0.03	ND<	0.03
2-Nitroaniline	ND<	0.15	ND<	0.15
Dimethylphthalate	ND<	0.02	ND<	0.02
Acenaphthylene	ND<	0.02	ND<	0.02
2,6-Dinitrotoluene	ND<	0.11	ND<	0.11
3-Nitroaniline	ND<	0.13	ND<	0.13
Acenaphthene	ND<	0.04	ND<	0.04
2,4-Dinitrophenol	ND<	0.22	ND<	0.22
4-Nitrophenol	ND≺ ND≺	0.14 0.02	ND<	0.14
Dibenzofuran 2.4-Dinitrotoluene	ND<	0.02	ND<	0.02
Diethylpthalate	TID.	0.164	1.0	0.08
4-Chlorophenyl-phenyl ether	ND<	0.04	ND<	0.04
Fluorene	ND<	0.03	ND<	0.03
4-Nitroaniline	ND<	0.12	ND<	0.12
4,6-Dinitro-2-methylphenol	ND<	0.11	ND<	0.11
n-Nitrosodiphenylamine	ND<	0.04	ND<	0.03
4-Bromophenyl-phenyl ether	ND<	0.04	ND<	0.04
Hexachlorobenzene	ND<	0.03 0.05	ND<	0.02 0.05
Pentachlorophenol Phenanthrene	ND<	0.015	ND<	0.03
Anthracene	TU.	0.013	ND<	0.02
Di-n-butylphthalate		0.36		0.26
Fluoranthene	ND<		ND<	0.01
Pyrene	ND<	0.01	ND<	0.01
Butylbenzylphthalate		0.006	ND<	0.008
3,3'-Dichlorobenzidine	ND<		ND<	0.02
Benzo(a)anthracene	ND<		ND<	0.01
Chrysene	ND<	0.01	ND<	0.01
bis(2-Ethylhexyl)phthalate	NTS -	0.19 0.00	ND<	0.22 0.00
Di-n-octylphthalate	ND<		ND<	0.00
Benzo(b)fluoranthene Benzo(b)fluoranthene	ND<		ND<	0.01
Benzo(k)fluoranthene Benzo(a)pyrene	ND<		ND<	0.01
Indeno(1,2,3-cd)pyrene	ND<		ND<	0.01
Dibenzo(a,h)anthracene	ND<		ND<	0.01
Benzo(g,h,i)perylene	ND<		ND<	0.01
/m: /m -				

"ND<(....)" = Analyte detection limit value.

22-Mar-96

TRIANGLE LABORATORY SEMI-VOLATILE DATA

TEST DATA		
Run number	Tı	T2
Location	AFTERBURN	ER DISCHARGE
Date	01-31-96	02-02-96
Time period	1834-0110	1406-2031
SEMIVOLATILE ORGANICS EMISSION RESULT	S, g/sec 4.41E-07	7.92E-07
Bis (2-chloroethyl) ether	NID< 4.04E-07	ND< 3.77E-07
2-Chlorophenol	ND< 2.43E-07	ND< 2.27E-07
1,3-Dichlorobenzene	ND< 2.06E-07	ND< 1.92E-07
1,4-Dichlorobenzene	ND< 1.97E-07 3.83E-05	ND< 1.84E-07
Benzyl Alcohol 1,2-Dichlorobenzene	ND< 2.11E-07	1.51E-04 ND< 1.97E-07
1,245/chilototenzene 2-Methylphenol	ND< 3.86E-07	ND< 3.60E-07
bis (2-Chloroisopropyl) ether	ND< 4.16E-07	ND< 3.88E-07
4-Methylphenol	ND< 3.80E-07	ND< 3.55E-07
n-Nitroso-di-n-propylamine	ND< 5.11E-07	ND< 4.77E-07
Hexachloroethane	ND< 4.14E-07 ND< 2.56E-07	ND< 3.85E-07 ND< 2.49E-07
Nitrobenzene Isophorone	ND< 1.44E-07	ND< 1.40E-07
2-Nitrophenol	ND< 3.74E-07	ND< 3.64E-07
2,4-Dimethylphenol	ND< 3.16E-07	ND< 3.07E-07
Benzoic acid	5.06E-06	6.62E-06
Bis (2-chloroethoxy)-methane	ND< 3.20E-07	ND< 3.11E-07
2,4-Dichlorophenol 1,2,4-Trichlorobenzene	ND< 2.69E-07 ND< 2.18E-07	ND< 2.61E-07 ND< 2.13E-07
Naphthalene	1.36E-07	1.61E-07
4-Chloroanaline	ND< 2.07E-07	ND< 2.02E-07
Hexachlorobutadiene	ND< 2.63E-07	ND< 2.56E-07
4-chloro-3-methylphenol	ND< 3.29E-07	ND< 3.20E-07
2-Methylmaphthalene	ND< 1.27E-07 ND< 2.37E-07	ND< 1.24E-07 ND< 2.28E-07
Hexachlorocyclopentadiene 2,4,6-Trichlorophenol	ND< 2.95E-07	ND< 2.84E-07
2,4,5-Trichlorophenol	ND< 2.85E-07	ND< 2.75E-07
2-Chloronaphthalene	ND< 1.18E-07	ND< 1.14E-07
2-Nitroaniline	ND< 4.37E-07	ND< 4.20E-07
Dimethylphthalate	ND< 9.71E-08 ND< 7.58E-08	ND< 9.40E-08 ND< 7.32E-08
Acemphthylene 2,6-Dinitrotoluene	ND< 4.18E-07	ND< 4.03E-07
3-Nitroaniline	ND< 3.80E-07	ND< 3.65E-07
Acenaphthene	ND< 1.36E-07	ND< 1.31E-07
2,4-Dinitrophenol	ND< 8.63E-07	ND< 8.30E-07
4-Nitrophenol	ND< 4.10E-07	ND< 3.95E-07
Dibenzofuran 2,4-Dinitrotoluene	ND< 7.89E-08 ND< 2.72E-07	ND< 7.62E-08 ND< 2.62E-07
Diethylpthalate	7.89E-07	3.57E-07
4-Chlorophenyl-phenyl ether	ND< 1.88E-07	ND< 1.81E-07
Fluorene	ND< 1.03E-07	ND< 9.89E-08
4-Nitroaniline	ND< 3.72E-07 ND< 4.70E-07	ND< 3.58E-07 ND< 4.39E-07
4,6-Dinitro-2-methylphenol n-Nitrosodiphenylamine	ND< 4.70E-07 ND< 1.52F-07	ND< 4.39E-07 ND< 1.41E-07
4-Bromophenyl-phenyl ether	ND< 2.17E-07	ND< 2.04E-07
Hexachlorobenzene	ND< 1.56E-07	ND< 1.45E-07
Pentachlorophenol	ND< 2.72E-07	ND< 2.54E-07
Phenanthrene	ND< 5.97E-08 3.54E-08	ND< 5.54E-08 ND< 5.64E-08
Anthracene Di-n-butylphthalate	2.17E-06	1.51E-06
Fluoranthene	ND< 4.55E-08	ND< 4.25E-08
Pyrene	ND< 3.34E-08	ND< 2.97E-08
Butylbenzylphthalate	3.94E-08	ND< 5.24E-08
3,3'-Dichlorobenzidine Benzo(a)anthra cene	ND< 9.51E-08 ND< 3.54E-08	ND< 8.41E-08 ND< 3.17E-08
Benzo(a)anthracene Chrysene	ND< 3.84E-08	ND< 3.17E-08 ND< 3.36E-08
bis(2-Ethylhexyl)phthalate	1.65E-06	1.78E-06
Di-n-octylphthalate	ND< 2.53E-08	ND< 2.77E-08
Benzo(b)fluoranthene	ND< 3.44E-08	ND< 3.86E-08
Benzo(k)fluoranthene	ND< 3.54E-08	ND< 3.96E-08
Benzo(a)pyrene Indeno(1,2,3-od)pyrene	ND< 3.54E-08 ND< 3.64E-08	ND< 3.96E-08 ND< 3.96E-08
Dibenzo(a,h)anthracene	ND< 4.85E-08	ND< 5.24E-08
Benzo(g,h,i)perylene	ND< 4.25E-08	ND< 4.65E-08

[&]quot;ND<(....)" = Analyte detection limit value.

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA

HOT GAS TEST PROGRAM SUMMARY OF TENTATIVELY IDENTIFIED SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS

TRIANGLE LABORATORY SEMI-VOLATILE DATA

TEST DATA			
Run number	Ti		ÆILD BLANK
Location		AFTERBURNER DISCHARGE	02 04 06
Date	01-31-96	02-02-96 1406-2021	02-04-96
Time period	1834-0110	1406–2031	
SEMI-VOLATILE ORGANICS LABORATORY REPORT	DATA, ug 1091	2749	4835
Benzaldehyde Methyl Ester Benzoic Acid	ND	ND	60
Alkylbenzene	ND	9	ND
Substituted Benzene	ND	403	1757
Substituted Benzaldehyde	12	18	10
Substituted Alkane	55	ND	ND
Triacetin	103	ND	330
Alkyl Methyl Ester Benzoic Acid	ND	10	12 9
Aromatic Ketone	12	16 207	56
Bibenzyl	55 9	18	11
Benzophenone	21	20	ND
Substituted Amide Alkyl Acid	ND	ND	21
Substituted Aromatic Hydrocarbon	ND	ND	100
SEMIVOLATILE ORGANICS CONCENTRATIONS, ug/d	scan.		
Benzaldehyde	211.83	543.29	
Methyl Ester Benzoic Acid	ND	ND	
Alkylbenzene	ND	1.78	
Substituted Benzene	ND 233	79.65 3.56	
Substituted Benzaldehyde	2.33 10.68	3.50 ND	
Substituted Alkane Triacetin	20.00	ND	
Alkyl Methyl Ester Benzoic Acid	ND	1.98	
Aromatic Ketone	2.33	3.16	
Bibenzyl	10.68	40.91	
Benzophenone	1.75	3.56	
Substituted Amide	4.08	3.95	
Alkyl Acid	ND	ND	
Substituted Aromatic Hydrocarbon	ND	ND	
SEMIVOLATILE ORGANICS CONCENTRATIONS, II/de			
Benzaldehyde	1.32E-08	3.39E-08	
Methyl Ester Benzoic Acid	ND	ND	
Alkylbenzene	ND	1.11E-10 4.97E-09	
Substituted Benzene Substituted Benzendebyde	ND 1.45E-10	2.22E-10	
Substituted Benzaldehyde Substituted Alkane	6.67E-10	ND	
Triacetin	1.25E-09	ND	
Alkyl Methyl Ester Benzoic Acid	ND	1.23E-10	
Aromatic Ketone	1.45E-10	1.97E-10	
Bibenzyl	6.67E-10	2.55E-09	
Benzophenone	1.09E-10	2.22E-10	
Substituted Amide	2.55E-10	2.47E-10	
Alkyl Acid	ND ND	ND ND	
Substituted Aromatic Hydrocarbon	ND	ND	
SEMIVOLATILE ORGANICS EMISSION RESULTS, 1b/h	r 8.76E-04	2.16E-03	
Benzaldehyde Methyl Ester Benzoic Acid	ND	ND	
Alkylbenzene	ND	7.07E-06	
Substituted Benzene	ND	3.16E-04	
Substituted Benzaldehyde	9.63E-06	1.41E-05	
Substituted Alkane	4.41E-05	ND	
Triacetin	8.27E-05	ND	
Alkyl Methyl Ester Benzoic Acid	ND	7.85E-06	
Aromatic Ketone	9.63E-06	1.262-05	
Bibenzyl	4.41E-05	1.63E-04	
Benzophenone	7.2213-06	1.41E-05	
Substituted Arnide	1.69E-05	1.57E-05	
Alkyl Acid Substituted Aromatic Hydrocarbon	ND ND	ND ND	
·			
SEMIVOLATILE ORGANICS EMISSION RESULTS, g/sc Benzaldehyde	xc 1.10 E- 04	2.72E-04	
Methyl Ester Benzoic Acid	ND	ND	
Alkylbenzene	ND	8.90E-07	
Substituted Benzene	ND	3.99E-05	
Substituted Benzaldehyde	1.21E-06	1.78E-06	
Substituted Alkane	5.56E-06	ND	
Triacetin	1.04E-05	ND	
Alkyl Methyl Ester Benzoic Acid	ND	9.89E-07	
Aromatic Ketone	1.21E-06	1.58E-06	
Bibenzyl	5.56E-06	2.05E-05	
Benzophenone	9.1012-07	1.78E-06	
Substituted Amide	2.12E-06	1.98E-06	
Alkyl Acid	ND ND	ND NT	
Substituted Aromatic Hydrocarbon	ND	ND	

Note: Data not available for test T3.

ALABAMA ARMY AMMUNTTION PLANT CHILDERSBURG, ALABAMA HOT GAS TEST PROGRAM SUMMARY OF PARTICULATE, HCI AND Cl_2 TEST DATA AND TEST RESULTS

TEST DATA			
Test run number	T1	T2	T3
Test location	AFTER	BURNER DISCI	HARGE
Test date	01-31-96	02-02-96	02 - 04 -9 6
Test time period	1834-0103	1407-2011	1408-2026
-			
SAMPLING DATA	320.0	320.0	320.0
Sampling duration, min.	0.620	0.620	0.620
Nozzle diameter, in.	0.002097	0.002097	0.002097
Cross sectional nozzle area, sq.ft.	29.73	29.59	30.28
Barometric pressure, in. Hg	0.71	0.69	0.56
Avg. orifice press. diff., in H_2O Avg. dry gas meter temp., deg F	56	49	44
Avg. dry gas meter temp., deg. R	516	509	504
Total liquid collected by train, ml	294.0	285.1	244.9
Std. vol. of H ₂ O vapor coll., cu.ft.	13.8	13.4	11.5
Dry gas meter calibration factor	1.0020	1.0020	1.0020
Sample vol. at meter cond., dcf	146.538	145.049	128.758
Sample vol. at std. cond., dscf (1)	149.429	149.381	136.963
Percent of isokinetic sampling	103.0	105.0	103.7
STACK GAS STREAM COMPOSITION DATA		. .	
CO_2 , % by volume, dry basis	5.7	5.8	6.1
O ₂ , % by volume, dry basis	12.1	11.9	11.9
CO,% by volume, dry basis	0.0	0.0	0.0
N ₂ , % by volume, dry basis	82.2	82.3	82.0
Molecular wt. of dry gas, lb/lb mole	29.4	29.4	29.5 0.078
H ₂ O vapor in gas stream, prop. by vol.	0.085 0.915	0.082 0.918	0.922
Mole fraction of dry gas	28.4	28.5	28.6
Molecular wt. of wet gas, lb/lb mole	20.4	26.3	20.0
GAS STREAM VELOCITY AND VOLUMETRIC	FLOW DATA		
Static pressure, in. H ₂ O	-0.10	-0.10	-0.10
Static pressure, in. Hg	-0.007	-0.007	-0.007
Absolute pressure, in. Hg	29.72	29.58	30.27
Avg. temperature, deg. F	1675	1655	1643
Avg. absolute temperature, deg.R	2135	2115	2103
Pitot tube coefficient	0.84	0.84	0.84
Total number of traverse points	16	16	16
Avg. gas stream velocity, ft./sec.	16.0	15.6	14.0
Stack/duct cross sectional area, sq.ft.	4.59	4.59	4.59 3860
Avg. gas stream volumetric flow, wacf/min.	4410	4300 970	900
Avg. gas stream volumetric flow, dscf/min.	990	970	900
LABORATORY REPORT DATA			
Total Particulate, g	0.0028	0.0014	0.0038
Total HCl, mg	2.016	1.738	1.608
Total CL ₂ , mg	0.234	1.216	1.242
PARTICULATE EMISSIONS			
Concentration, gr/dscf	2.89E-04	1.45E-04	4.28E-04
Concentration, gr/dscf @ 7% O ₂	4.52E-04	2.22E-04	6.56E-04
Concentration, gr/dscf @ 12% CO ₂	6.05E-04	2.98E-04	8.41E-04
Mass rate, lbs/hr	0.002	0.001	0.003
HCI EMISSIONS			
Concentration, lbs/dscf	2.97E-08	2.56E-08	2.59E-08
Concentration, ppm/v	0.31	0.27	0.27
Mass rate, lbs/hr	1.77E-03	1.50E-03	1.40E-03
OL EMESIONS			
Cl ₂ EMISSIONS	3.45E-09	1.79E-08	2.00E-08
Concentration, lbs/dscf Concentration, ppm/v	0.019	0.098	0.109
Mass rate, lbs/hr	2.06E-04	1.05E-03	1.08E-03
1v1a33 1atc, 103/111	2.00L 04	1.03L 03	1.00L 03

⁽¹⁾ Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 in Hg (760 mmHg)

TEST DATA				
Run number	T1	T1 (MID-SOAK)	T2	T3
Location		FURNACE DI	SCHARGE	
_	01 -31-9 6	02-01-96	02-02-96	02-04-96
Date Time period	1832-0122	0644-1005	1405-2100	1406-2106
Time period	1002 0122			
SAMPLING DATA				
Sampling duration, min.	410.0	180.0	415.0	420.0
Nozzle diameter, in.	0.311	0.311	0.275	0.275
Cross sectional nozzle area, sq.ft.	0.000528	0.000528	0.000412	0.000412
Barometric pressure, in. Hg	29.73	29.76	29.59	30.28
Avg. orifice press. diff., in H ₂ O	1.85	1.17	0.77	0.69
Avg. dry gas meter temp., deg F	57	59	45	40
Avg. abs. dry gas meter temp., deg. R	517	519	505	500
Total liquid collected by train, ml	187.7	67.5	108.8	106.6
Std. vol. of H2O vapor coll., cu.ft.	8.8	3.2	5.1	5.0
Dry gas meter calibration factor	1.0060	1.0060	1.0060	1.0060
Sample vol. at meter cond., dcf	288.854	104.276	194.617	179.138
Sample vol. at std. cond., dscf (1)	296.360	106.493	202.829	192.896
Percent of isokinetic sampling	99.7	101.4	102.5	101.0
CAR STEPLANT CON CONTROL TO ATTA				
GAS STREAM COMPOSITION DATA	1.3	1.5	0.2	1.5
CO ₂ , % by volume, dry basis	19.8	19.3	19.1	19.4
O ₂ . % by volume, dry basis	0.0	0.0	0.0	0.0
CO, % by volume dry basis	79.0	79.2	80.7	79.1
N ₂ , % by volume, dry basis	28.99	29.01	28.80	29.02
Molecular wt. of dry gas, lb/lb mole H2O vapor in gas stream, prop. by vol.	0.029	0.029	0.025	0.025
Mole fraction of dry gas	0.971	0.971	0.975	0.975
Molecular wt. of wet gas, lb/lb mole	28.7	28.7	28.5	28.7
GAS STREAM VELOCTLY AND VOLUMETRIC F	LOW DATA		0.770	0.00
Static pressure, in. H ₂ O	-0.78	-1.00	-0.70	-0.90
Static pressure, in. Hg	-0.057	-0.074	-0.051	-0.066
Absolute pressure, in. Hg	29.67	29.69	29.54	30.21
Avg. temperature, deg. F	291	475	356	403
Avg. absolute temperature, deg.R	751	935	816	863
Pitot tube coefficient	0.99	0.99	0.99	0.99
Total number of traverse points	1	1	1	1
Avg. gas stream velocity, ft./sec.	33.8	33.9	31.0	30.5
Stack/duct cross sectional area, sq.ft.	0.492	0.492	0.492	0.492
Avg. gas stream volumetric flow, wacf/min.	1000	1000	910	900
Avg. gas stream volumetric flow, dscf/min.	680	540	570	540

⁽¹⁾ Standard conditions = 68 °F (20 °C) and 29.92 inches Hg (760 mm Hg)

TEST DATA						-		
Run number		T1	Ti	(MID-SOAK)	C DICOIL	T2		T3
Location				FURNAC	E DISCHA			
Date		01 -31-9 6		02-01-96		02-02-96		02-04-96
Time period		1832-0122		0644-1005		1405-2100		1406-2106
EXPLOSIVES LABORATORY REPORT DATA, ug								
HMX	ND<	462.0	ND<	28.60	ND<	462.0	ND<	462.0
RDX		1878.0		1.80		2880.0		1170.0
Trinitrobenzene (1,3,5-TNB)		854.0		8.00		579.0		483.0
Dinitrobenzene (1,3-DNB)		14.0	ND<	6.72		9.4		23.0
Nitrobenzene (NB)	ND<	109.2	ND<	6.72	ND<	109.2	ND<	109.2
Tetryl		316.0	ND<	19.40		205.0		124.0
2,4,6-Trinitrotoluene (TNT)		56000.0		151.60		10420.0		9960.0
2,6 Dinitrotoluene (2,6-DNT)	ND<	105.0	ND<	6.50		21.0	ND<	105.0
2,4-Dinitrotoluene (2,4-DNT)		76.0	ND<	6.50	ND<	105.0	ND<	105.0
EXPLOSIVES CONCENTRATIONS, ug/dscm								
HMX	ND<	55.0	ND<	9.5	ND<	80.4	ND<	84.6
RDX		223.8		0.6		501.4		214.2
Trinitrobenzene (1,3,5-TNB)		101.8		2.7		100.8		88.4
Dinitrobenzene (1,3-DNB)		1.7	ND<	2.2		1.6		4.2
Nitrobenzene (NB)	ND<	13.0	ND<	2.2	ND<	19.0	ND<	20.0
Tetryl		37.7	ND<	6.4		35.7		22.7
2,4,6-Trinitrotoluene (TNT)		6672.3		50.3		1814.0		1823.2
2,6 Dinitrotoluene (2,6-DNT)	ND<	12.5	ND<	2.2		3.7	ND<	19.2
2,4-Dinitrotoluene (2,4-DNT)		9.1	ND<	2.2	ND<	18.3	ND<	19.2
EXPLOSIVES CONCENTRATIONS, Ib/dscf								
HMX	ND<	3.44E-09	ND<	5.92E-10	ND<	5.02E-09	ND<	5.28E-09
RDX		1.40E-08		3.73E-11		3.13E-08		1.34E-08
Trinitrobenzene (1,3,5-TNB)		6.35E-09		1.66E-10		6.29E-09		5.52E-09
Dinitrobenzene (1,3-DNB)		1.04E-10		1.39E-10		1.02E-10		2.63E-10
Nitrobenzene (NB)	ND<	8.12E-10		1.39E-10	ND<	1.196-09	ND<	1.25E-09
Tetryl		2.35E-09	ND<	4.02E-10		2.23E-09		1.42E-09
2,4,6-Trinitrotoluene (TNT)		4.17E-07		3.14E-09		1.13E-07		1.14E-07
2,6 Dinitrotoluene (2,6-DNT)	ND<	7.81E-10		1.35B-10		2.28E-10	_	1.20E-09
2,4-Dinitrotoluene (2,4-DNT)		5.65E-10	ND<	1.35E-10	ND<	1.14E-09	ND<	1.20E-09

ND<= Analyte detection limit value.
NA = Sample was not analyzed for these compounds.

TEST DATA								
Run number		T1	T1	(MID-SOAK)		T2		T3
Location				FURNACE	DISCH	ARGE		
Date		01-31-96		02-01-96		02-02-96		02-04-96
Time period		1832-0122		0644-1005		1405-2100		1406-2106
Time period								
EXPLOSIVES EMISSION RATES, lb/hr								
HMX	ND<	1.39E-04	ND<	1.93E-05	ND<	1.64E-04	ND<	1.80E-04
RDX		5.67E-04		1.22E-06		1.02E-03		4.56E-04
Trinitrobenzene (1,3,5-TNB)		2.58E-04		5.41B-06		2.05E-04		1.88E-04
Dinitrobenzene (1,3-DNB)		4.23E-06		4.54E-06		3.34E-06		8.97E-06
Nitrobenzene (NB)	ND<	3.30E-05		4.54E-06	ND<	3.88E-05	ND<	4.26E-05
Tetryl		9.54E-05	ND<	1.31E-05		7.27E-05		4.84E-05
2,4,6-Trinitrotoluene (TNT)		1.69E-02		1.02E-04		3.70E-03		3.89E-03
2,6 Dinitrotoluene (2,6-DNT)	ND<	3.17E-05		4.39E-06		7.45E-06		4.10E-05
2,4-Dinitrotoluene (2,4-DNT)		2.29E-05	ND<	4.39E-06	ND<	3.73E-05	ND<	4.10E-05
EXPLOSIVES CONCENTRATIONS, ppb/v								
HMX	ND<	4.47	ND<	0.77	ND<	6.53	ND<	6.87
RDX		24.23		0.06		54.30		23.20
Trinitrobenzene (1,3,5-TNB)		11.49		0.30		11.38		9.98
Dinitrobenzene (1,3-DNB)		0.24	ND<	0.32		0.23		0.60
	ND<	2.54	ND<	0.44	ND<	3.72	ND<	3.91
Nitrobenzene (NB)	TID.	3.16	ND<	0.54		2.99		1.90
Tetryl		707.18	1101	5.33		192.26		193.24
2,4,6-Trinitrotoluene (TNT)	ND<	1.65	ND<	0.28		0.48	ND<	2.54
2,6 Dinitrotoluene (2,6-DNT)	ND.	1.20	ND<	0.28	ND<	2.41	ND<	2.54
2,4-Dinitrotoluene (2,4-DNT)		1.20	ND	0.20	THD.	2.71	TID.	2.04
EXPLOSIVES EMISSION RATES, g/sec								
HMX	ND<	1.76E-05	ND<	2.44E-06	ND<	2.07E-05	ND<	2.27E-05
RDX		7.14E-05		1.53E-07		1.29E-04		5.75E-05
Trinitrobenzene (1,3,5-TNB)		3.25E-05		6.81E-07		2.59E-05		2.37E-05
Dinitrobenzene (1,3-DNB)		5.32E-07		5.72E-07		4.20E-07		1.13E-06
Nitrobenzene (NB)	ND<	4.15E-06	ND<	5.72E-07	ND<	4.88E-06	ND<	5.37E-06
Tetryl		1.20E-05	ND<	1.65E-06		9.17E-06		6.10E-06
2,4,6-Trinitrotoluene (TNT)		2.13E-03		1.29E-05		4.66E-04		4.90E-04
2,6 Dinitrotoluene (2,6-DNT)	ND<	3.99E-06	ND<	5.54E-07		9.39E-07		5.16E-06
2,4-Dinitrotoluene (2,4-DNT)		2.89E-06	ND<	5.54E-07	ND<	4.69E-06	ND<	5.16E-06
SUMMARY OF DIESEL RANGE ORGANICS TE	ST RESULT	(1)						
Laboratory Report Data, ug		15400		NA		NA		NA
Concentration, ug/dscm		1834.9		NA		NA		NA
Concentration, lb/dscf		1.15E-07		NA		NA		NA
Concentration, ppb/v (2)		310.25		NA		NA		NA
Emission Rate, lb/hr		4.65E-03		NA		NA		NA
Emission Rate, g/sec		5.86E-04		NA		NA		NA

ND<= Analyte detection limit value.

NA = Sample was not analyzed for these compounds.

(1) The diesel range organic analysis was performed on T1 sample only.

(2) The reported ppb/v concentrations for these compounds is calculated using the molecular weight of decane.

TEST DATA			
Run number	T1	T2	T3
Location		AFTERBURNER DISCHARGE	
Date	01 - 31 -9 6	02-02-96	02-04-96
Time period	1834-0110	1406–2031	1409–2036
SAMPLING DATA			
Sampling duration, min.	360.0	360.0	360.0
Nozzle diameter, in.	0.622	0.622	0.622
Cross sectional nozzle area, sq.ft.	0.002110	0.002110	0.002110
Barometric pressure, in. Hg	29.73	29.59	30.28
Avg. orifice press. diff., in H ₂ O	0.86	0.80	0.62
Avg. dry gas meter temp., deg F	53	43	38
Avg. abs. dry gas meter temp., deg. R	513	503	498
Total liquid collected by train, ml	343.2	326.0	231.4
Std. vol. of H ₂ O vapor coll., cu.ft.	16.2	15.3	10.9
Dry gas meter calibration factor	1.0050	1.0050	1.0050
Sample vol. at meter cond., dcf	176.562	171.137	145.923
Sample vol. at std. cond., dscf (1)	181.864	178.670	157.476
Percent of isokinetic sampling	99.5	101.8	97.8
GAS STREAM COMPOSITION DATA			
CO ₂ , % by volume, dry basis	5.7	5.8	6.1
O ₂ , % by volume, dry basis	12.1	11.9	11.9
CO, % by volume dry basis	0.0	0.0	0.0
N ₂ , % by volume, dry basis	82.2	82.3	82.0
Molecular wt. of dry gas, lb/lb mole	29.40	29.41	29.45
H2O vapor in gas stream, prop. by vol.	0.082	0.079	0.065
Mole fraction of dry gas	0.918	0.921	0.935
Molecular wt. of wet gas, lb/lb mole	28.5	28.5	28.7
GAS STREAM VELOCITY AND VOLUMETRIC F	LOW DATA		
Static pressure, in. H ₂ O	-0.10	-0.10	-0.10
Static pressure, in. Hg	-0.007	-0.007	-0.007
Absolute pressure, in. Hg	29.72	29.58	30.27
Avg. temperature, deg. F	1560	1515	1510
Avg. absolute temperature, deg.R	2020	1975	1970
Pitot tube coefficient	0.84	0.84	0.84
Total number of traverse points	12		12
Avg. gas stream velocity, ft./sec.	16.8	15.8	13.9
Stack/duct cross sectional area, sq.ft.	4.587	4.587	4.587
Avg. gas stream volumetric flow, wacf/min.	4630	4360	3840
Avg. gas stream volumetric flow, dscf/min.	1100	1060	970

⁽¹⁾ Standard conditions = $68 \, ^{\circ}\text{F} (20 \, ^{\circ}\text{C})$ and $29.92 \, \text{inches Hg} (760 \, \text{mm Hg})$

TEST DATA						
Run number		T1		T2		T3
Location			AFTERBUR		SCHARGE	
Date		01 - 31 -9 6		0 2-02-9 6		02-04-96
Time period		1834-0110		1406–2031		1409–2036
EXPLOSIVES LABORATORY REPORT DATA, ug						
HMX	ND<	26.40	ND<	28.60	ND<	28.60
RDX	ND<	12.00	ND<	13.00	ND<	13.00
Trinitrobenzene (1,3,5-TNB)	ND<	6.00	ND<	6.50	ND<	6.50
Dinitrobenzene (1,3-DNB)	ND<	6.24	ND<	6.72	ND<	6.72
Nitrobenzene (NB)	ND<	6.24	ND<	6.72	ND<	6.72
Tetryl	ND<	18.00	ND<	19.40	ND<	19.40
2,4,6-Trinitrotoluene (TNT)	ND<	6.00	ND<	6.50	ND<	6.50
2,6 Dinitrotoluene (2,6-DNT)	ND<	6.00	ND<	6.50	ND<	6.50
2,4-Dinitrotoluene (2,4-DNT)	ND<	6.00	ND<	6.50	ND<	6.50
EXPLOSIVES CONCENTRATIONS, ug/dscm						
HMX	ND<	5.13	ND<	5.65	ND<	6.41
RDX	ND<	2.33	ND<	2.57	ND<	2.91
Trinitrobenzene (1,3,5-TNB)	ND<	1.16	ND<	1.28	ND<	1.46
Dinitrobenzene (1,3-DNB)	ND<	1.21	ND<	1.33	ND<	1.51
Nitrobenzene (NB)	ND<	1.21	ND<	1.33	ND<	1.51
Tetryl	ND<	3.49	ND<	3.83	ND<	4.35
2,4,6-Trinitrotoluene (TNT)	ND<	1.16	ND<	1.28	ND<	1.46
2,6 Dinitrotoluene (2,6-DNT)	ND<	1.16	ND<	1.28	ND<	1.46
2,4-Dinitrotoluene (2,4-DNT)	ND<	1.16	ND<	1.28	ND<	1.46
EXPLOSIVES CONCENTRATIONS, lb/dscf						
HMX	ND<	3.20E-10	ND<	3.53E-10	ND<	4.00E-10
RDX	ND<	1.45E-10	ND<	1.60E-10	ND<	1.82E-10
Trinitrobenzene (1,3,5–TNB)	ND<	7.27E-11	ND<	8.02E-11	ND<	9.10E-11
Dinitrobenzene (1,3-DNB)	ND<	7.56E-11	ND<	8.29E-11	ND<	9.41E - 11
Nitrobenzene (NB)	ND<	7.56E-11	ND<	8.29E-11	ND<	9.41E-11
Tetryl	ND<	2.18E-10	ND<	2.39E-10	ND<	2.72E-10
2,4,6-Trinitrotoluene (TNT)	ND<	7.27E-11	ND<	8.02E-11	ND<	9.10 E-11
2,6 Dinitrotoluene (2,6-DNT)	ND<	7.27E-11	ND<	8.02E-11	ND<	9.10E-11
2,4-Dinitrotoluene (2,4-DNT)	ND<	7.27E-11	ND<	8.02E-11	ND<	9.10E-11

ND< = Analyte detection limit value.

TEST DATA		TT.4		TO		ma.
Run number		T1	4 1717T DI 11	T2	CILADOE	T3
Location			AFTERBUR		CHARGE	
Date		01-31-96		02-02-96		02-04-96
Time period		1834-0110		1406–2031		1409–2036
EXPLOSIVES EMISSION RATES, lb/hr						
HMX	ND<	2.12E-05	ND<	2.25E-05	ND<	2.34E-05
RDX	ND<	9.63 E- 06	ND<	1.02E-05	ND<	1.06E-05
Trinitrobenzene (1,3,5-TNB)	ND<	4.82E-06	ND<	5.10E-06	ND<	5.31E-06
Dinitrobenzene (1,3-DNB)	ND<	5.01E-06	ND<	5.28E-06	ND<	5.49E-06
Nitrobenzene (NB)	ND<	5.01E-06	ND<	5.28E-06	ND<	5.49E-06
Tetryl	ND<	1.44E-05	ND<	1.52E-05	ND<	1.59E-05
2,4,6-Trinitrotoluene (TNT)	ND<	4.82E-06	ND<	5.10E-06	ND<	5.31E-06
2,6 Dinitrotoluene (2,6-DNT)	ND<	4.82E-06	ND<	5.10E-06	ND<	5.31E-06
2,4-Dinitrotoluene (2,4-DNT)	ND<	4.82E-06	ND<	5.10E-06	ND<	5.31E-06
EXPLOSIVES CONCENTRATIONS, ppb/v						
HMX	ND<	0.42	ND<	0.46	ND<	0.52
RDX	ND<	0.25	ND<	0.28	ND<	0.32
Trinitrobenzene (1,3,5-TNB)	ND<	0.13	ND<	0.15	ND<	0.16
Dinitrobenzene (1,3-DNB)	ND<	0.17	ND<	0.19	ND<	0.22
Nitrobenzene (NB)	ND<	0.24	ND<	0.26	ND<	0.29
Tetryl	ND<	0.29	ND<	0.32	ND<	0.36
2,4,6-Trinitrotoluene (TNT)	ND<	0.12	ND<	0.14	ND<	0.15
2,6 Dinitrotoluene (2,6-DNT)	ND<	0.15	ND<	0.17	ND<	0.19
2,4-Dinitrotoluene (2,4-DNT)	ND<	0.15	ND<	0.17	ND<	0.19
EXPLOSIVES EMISSION RATES, g/sec						
HMX	ND<	2.67E-06	ND<	2.83E-06	ND<	2.95E-06
RDX	ND<	1.21E-06	ND<	1.29E-06	ND<	1.34E-06
Trinitrobenzene (1,3,5-TNB)	ND<	6.07E-07	ND<	6.43E-07	ND<	6.69E-07
Dinitrobenzene (1,3-DNB)	ND<	6.31E-07	ND<	6.65E-07	ND<	6.92E-07
Nitrobenzene (NB)	ND<	6.31E-07	ND<	6.65E-07	ND<	6.92E-07
Tetryl	ND<	1.82E-06	ND<	1.92E-06	ND<	2.00E-06
2,4,6-Trinitrotoluene (TNT)	ND<	6.07E-07	ND<	6.43E-07	ND<	6.69E-07
2,6 Dinitrotoluene (2,6-DNT)	ND<	6.07E-07	ND<	6.43E-07	ND<	6.69E-07
2,4-Dinitrotoluene (2,4-DNT)	ND<	6.07E-07	ND<	6.43E-07	ND<	6.69 E -07

ND<= Analyte detection limit value.

TEST DATA			
Run number	TI	T2	T3
Location	A	AFTERBURNER DISCHARO	GE .
Date	01-31-96	02-02-96	02-04-96
Time period	1834-0110	1406-2031	1409-2036
•			
SAMPLING DATA			
Sampling duration, min.	360.0	360.0	360.0
Nozzle diameter, in.	0.622	0.622	0.622
Cross sectional nozzle area, sq.ft.	0.002110	0.002110	0.002110
Barometric pressure, in. Hg	29.73	29.59	30.28
Avg. orifice press. diff., in H ₂ O	0.86	0.80	0.62
Avg. dry gas meter temp., deg F	53	43	38
Avg., abs., dry gas meter temp., deg., R	513	503	498
Total liquid collected by train, ml	343.2	326.0	231.4
Std. vol. of H ₂ O vapor coll., cu.ft.	16.2	15.3	10.9
Dry gas meter calibration factor	1.0050	1.0050	1.0050
Sample vol. at meter cond., dcf	176.562	171.137	145.923
Sample vol. at std. cond., dscf (1)	181.864	178.670	157.476
Percent of isokinetic sampling	99.5	101.8	97.8
GAS STREAM COMPOSITION DATA			
CO ₂ , % by volume, dry basis	5.7	5.8	6.1
O ₂ , % by volume, dry basis	12.1	11.9	11.9
CO, % by volume dry basis	0.0	0.0	0.0
N ₂ , % by volume, dry basis	82.2	82.3	82.0
Molecular wt. of dry gas, lb/lb mole	29.40	29.41	29.45
H2O vapor in gas stream, prop. by vol.	0.082	0.079	0.065
Mole fraction of dry gas	0.918	0.921	0.935
Molecular wt. of wet gas, lb/lb mole	28.5	28.5	28.7
GAS STREAM VELOCITY AND VOLUMETRIC FLO		0.40	0.10
Static pressure, in. H ₂ O	-0.10	-0.10	-0.10
Static pressure, in. Hg	-0.007	-0.007	-0.007
Absolute pressure, in. Hg	29.72	29.58	30.27
Avg. temperature, deg. F	1560	1515	1510
Avg. absolute temperature, deg.R	2020	1975	1970
Pitot tube coefficient	0.84	0.84	0.84
Total number of traverse points	12	12	12
Avg. gas stream velocity, ft./sec.	16.8	15.8	13.9
Stack/duct cross sectional area, sq.ft.	4.587	4.587	4.587
Avg. gas stream volumetric flow, wacf/min.	4630	4360	3840
Avg. gas stream volumetric flow, dscf/min.	1100	1060	970

⁽¹⁾ Standard conditions = 68 °F (20 °C) and 29.92 inches Hg (760 mm Hg)

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA HOT GAS TEST PROGRAM

SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS

TEST DATA						
Run number		T1	ern ny inat	T2 ED DICOU	TADOR	T3
Location				ER DISCH		20406
Date		1-31-96		2-02-9 6 06-2031		2-04-9 6 09-2036
Time period	10	334-0110	14	00-2031	14	09-2030
SEMI-VOLATILE ORGANICS LABORATORY REL	PORT DATA	A, ug				
Phenol	ND<	300	ND<	300	ND<	300
Bis (2-chloroethyl) ether	ND<	300	ND<	300	ND<	300
2-Chlorophenol	ND<	300	ND<	300	ND<	300
1,3-Dichlorobenzene	ND<	300	ND<	300 300	ND<	300 300
1,4-Dichlorobenzene	ND<	300 300	ND<	300	ND<	300
Benzyl Alcohol 1,2-Dichlorobenzene	ND<	300	ND<	300	ND<	300
2-Methyl phenol	ND<	300	ND<	300	ND<	300
bis (2-Chloroisopropyl) ether	ND<	300	ND<	300	ND<	300
4-Methylphenol	ND<	300	ND<	300	ND<	300
n-Nitroso-di-n-propylamine	ND<	300	ND<	300	ND<	300
Hexachloroethane	ND<	300	ND<	300	ND<	300
Nitrobenzene	ND<	300	ND<	300	ND<	300
Isophorone	ND< ND<	300 300	ND< ND<	300 300	ND<	300 300
2-Nitrophenol	ND<	300	ND<	300	ND<	300
2,4-Dimethylphenol Benzoic acid	ND<	1440	ND<	1440	ND<	1440
Bis (2-chloroethoxy)-methane	ND<	300	ND<	300	ND<	300
2,4-Dichlorophenol	ND<	300	ND<	300	ND<	300
1,2,4-Trichlorobenzene	ND<	300	ND<	300	ND<	300
Naphthalene	ND<	300	ND<	300	ND<	300
4-Chloroanaline	ND<	300	ND<	300	ND<	300 300
Hexachlorobutadiene	ND< ND<	300 300	ND< ND≺	300 300	ND<	300
4-chloro-3-methylphenol 2-Methylmaphthalene	ND<	300	ND<	300	ND<	300
Hexachlorocyclopentadiene	ND<	300	ND<	300	ND<	300
2.4,6-Trichlorophenol	ND<	300	ND<	300	ND<	300
2,4,5-Trichlorophenol	ND<	1440	ND<	1440	ND<	1440
2-Chloronaphthalene	ND<	300	ND<	300	ND<	300
2-Nitroaniline	ND<	1440	ND<	1440 300	ND≺ ND≺	1440 300
Dimethylphthalate	ND< ND<	300 300	ND< ND<	300	ND<	300
Acenaphthylene 2.6-Dinitrotoluene	ND<	300	ND<	300	ND<	300
3-Nitroaniline	ND<	1440	ND<	1440	ND<	1440
Acenaphthene	ND<	300	ND<	300	ND<	300
2,4-Dinitrophenol	ND<	1440	ND<	1440	ND<	1440
4-Nitrophenol	ND<	1440	ND<	1440	ND<	1440
Dibenzofuran	ND<	300	ND<	300	ND<	300
2,4-Dinitrotoluene	ND<	300 8 J	ND<	300 34 J	ND< ND≺	300 300
Diethylpthalate 4-Chlorophenyl-phenyl ether	ND<	300	ND<	300	ND<	300
Fluorene	ND<	300	ND<	300	ND<	300
4-Nitroaniline	ND<	1440	ND<	1440	ND<	1440
4,6-Dinitro-2-methylphenol	ND<	1440	ND<	1440	ND<	1440
n-Nitrosodiphenylamine	ND<	300	ND<	300	ND<	300
4-Bromophenyl-phenyl ether	ND<	300	ND<	300	ND<	300
Hexachlorobenzene	ND<	300 3 J	ND<	300 14 J	ND<	300 1440
Pentachlorophenol Phenanthrene	ND<	300	ND<	300	ND<	300
Anthracene	ND<	300	ND<	300	ND<	300
Di-n-butylphthalate	•	5 J	ND<	300	ND<	300
Fluoranthene	ND<	300	ND<	300	ND<	300
Pyrene	ND<	300	ND<	300	ND<	300
Butylbenzylphthalate	ND<	300	ND<	300	ND<	300
3,3'-Dichlorobenzidine	ND<	600	ND<	600	ND≺ ND≺	600 300
Benzo(a)anthracene	ND< ND<	300 300		3 J 2 J	ND<	300
Chrysene bis(2-Ethylhexyl)phthalate	147	23 JB		11 JB	140	11 JB
Di-n-octylphthalate	ND<	300		2 J	ND<	300
Benzo(b)fluoranthene	ND<	300	ND<	300	ND<	300
Benzo(k)fluoranthene	ND<	300	ND<	300	ND<	300
Benzo(a)pyrene	ND<	300	ND<	300	ND<	300
Indeno(1,2,3-cd)pyrene	ND<	300	ND<	300	ND<	300
Dibenzo(a,h)anthracene	ND<	300	ND<	300	ND<	300
Benzo(g,h,i)perylene Carbazole	ND<	300 300	ND< ND<	300 300	ND<	300 300
Caroazote Diesel Range Organics (1)	ND<	6000	141	NA	142	NA.
Paret tringe Orfumes		0000				.41

[&]quot;ND<(....)" = Analyte detection limit value.

B=Detected in the field blank in quantities greater than the sample, therefore sample values are not blank corrected.

J=Detected in the samples in quantities less than the calibration detection limit.

(1) Diesel range organics analysis performed on T1 sample only.

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA

HOT GAS TEST PROGRAM SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS

TEST DATA						
Run number		T1	*******	T2	II A D.CT?	T3
Location			AFTERBURN		HAKGE	02.04.06
Date		01-31-96	-	12-02-96 106-2031		0 2-04-9 6 1409-2036
Time period	1	834-0110	1.	+00-2031		1407-2030
SEMIVOLATILE ORGANICS CONCENTRATION						45.05
Phenol	ND<	58.25	ND<	59.29	ND<	67.27
Bis (2-chloroethyl) ether	ND<	58.25	ND< ND<	59.29 59.29	ND<	67.27 67.27
2-Chlorophenol	ND<	58.25 58.25	ND<	59.29	ND<	67.27
1,3-Dichlorobenzene 1,4-Dichlorobenzene	ND<	58.25	ND<	59.29	ND<	67.27
Benzyl Alcohol	ND<	58.25	ND<	59.29	ND<	67.27
1,2-Dichlorobenzene	ND<	58.25	ND<	59.29	ND<	67.27
2-Methylphenol	ND<	58.25	ND<	59.29	ND<	67.27
bis (2-Chloroisopropyl) ether	ND<	58.25	ND<	59.29	ND<	67.27
4-Methylphenol	ND<	58.25	ND<	59.29	ND<	67.27
n-Nitroso-di-n-propylamine	ND<	58.25	ND<	59.29	ND<	67.27
Hexachloroethane	ND<	58.25	ND<	59.29 59.29	ND<	67.27 67.27
Nitrobenzene	ND<	58.25 58.25	ND≺ ND≺	59.29 59.29	ND<	67.27
Isophorone	ND<	58.25	ND<	59.29	ND<	67.27
2-Nitrophenol 2,4-Dimethylphenol	ND<	58.25	ND<	59.29	ND<	67.27
Benzoic acid	ND<	279.59	ND<	284.59	ND<	322.89
Bis (2-chloroethoxy)-methane	ND<	58.25	ND<	59.29	ND<	67.27
2,4-Dichlorophenol	ND<	58.25	ND<	59.29	ND<	67.27
1,2,4-Trichlorobenzene	ND<	58.25	ND<	59.29	ND<	67.27
Naphthalene	ND<	58.25	ND<	59.29	ND<	67.27
4-Chloroanaline	ND<	58.25	ND<	59.29	ND<	67.27 67.27
Hexachlorobutadiene	ND<	58.25	ND<	59.29 59.29	ND<	67.27
4-chloro-3-methylphenol	ND< ND≺	58.25 58.25	ND<	59.29	ND<	67.27
2-Methylmaphthalene	ND<	58.25	ND<	59.29	ND<	67.27
Hexachlorocyclopentadiene 2,4,6-Trichlorophenol	ND<	58.25	ND<	59.29	ND<	67.27
2,4,5-Trichlorophenol	ND<	279.59	ND<	284.59	ND<	322.89
2-Chloronaphthalene	ND<	58.25	ND<	59.29	ND<	67.27
2-Nitroaniline	ND<	279.59	ND<	284.59	ND<	322.89
Dimethylphthalate	ND<	58.25	ND<	59.29	ND<	67.27
Acenaphthylene	ND<	58.25	ND<	59.29	ND<	67.27
2,6-Dinitrotoluene	ND<	58.25	ND<	59.29	ND<	67.27
3-Nitroaniline	ND<	279.59	ND<	284.59	ND<	
Acenaphthene	ND<	58.25	ND<	59.29	ND<	67.27 322.89
2,4-Dinitrophenol	ND<	279.59 279.59	ND<	284.59 284.59	ND<	
4-Nitrophenol Dibenzofuran	ND<	58.25	ND<	59.29	ND<	
2.4-Dinitrotoluene	ND<	58.25	ND<	59.29	ND<	67.27
Diethylpthalate		1.55 J		6.72 J	ND<	67.27
4-Chlorophenyl-phenyl ether	ND<	58.25	ND<	59.29	ND<	
Fluorene	ND<	58.25	ND<	59.29	ND<	
4-Nitroaniline	ND<	279.59	ND<	284.59	ND<	
4,6-Dinitro-2-methylphenol	ND<	279.59	ND<	284.59	ND<	
n-Nitrosodiphenylamine	ND<	58.25	ND<	59.29 59.29	ND<	
4-Bromophenyl-phenyl ether	ND<	58.25 58.25	ND<	59.29	ND<	
Hexachlorobenzene Pentachlorophenol	140~	0.58 J		2.77 J	ND<	
Phenanthrene	ND<	58.25	ND<	59.29	ND<	
Anthracene	ND<	58.25	ND<	59.29	ND<	67.27
Di-n-butylphthalate		0.97 J	ND<	59.29	ND<	67.27
Fluoranthene	ND<	58.25	ND<	59.29	ND<	
Pyrene	ND<	58.25	ND<	59.29	ND<	
Butylbenzylphthalate	ND<	58.25	ND<	59.29	ND<	
3,3'-Dichlorobenzidine	ND<	116.50	ND<	118.58	ND<	
Benzo(a)anthracene	ND<	58.25		0.59 J	ND<	
Chrysene	ND<	58.25 4.47 J	R	0.40 J 2.17 JB	IND	2.47 JB
bis(2-Ethylhexyl)phthalate Di-n-octylphthalate	ND<	58.25	D	0.40 J	ND<	
Di-n-octylphthalate Benzo(b)fluoranthene	ND<	58.25	ND<	59.29	ND<	
Benzo(k)fluoranthene	ND<	58.25	ND<	59.29	ND<	
Benzo(a)pyrene	ND<	58.25	ND<	59.29	ND<	
Indeno(1,2,3-cd)pyrene	ND<	58.25	ND<	59.29	ND<	
Dibenzo(a,h)anthracene	ND<	58.25	ND<	59.29	ND<	
Benzo(g,h,i)perylene	ND<	58.25	ND<	59.29	ND<	
Carbazole	ND<	58.25	ND<	59.29	ND<	
Diesel Range Organics (1)	ND<	1164.96		NA		NA

[&]quot;ND<(....)" = Analyte detection limit value.

B=Detected in the field blank in quantities greater than the sample, therefore sample values are not blank corrected.

J=Detected in the samples in quantities less than the calibration detection limit.

(1) Diesel range organics analysis performed on T1 sample only.

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA HOT GAS TEST PROGRAM

SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS

TEST DATA						
Run number		T1		T2		T3
Location			AFTERBUR	NER DISCHA		00.04.07
Date		01 - 31 -9 6 1834-0110		02-02-96 1406-2031		0 2-04-9 6 1409-2036
Time period		1034-0110		1400-2031		1407 2030
SEMIVOLATILE ORGANICS CONCENTRATIONS,						4.000
Phenol	ND<	3.64E-09	ND<	3.70E-09	ND<	4.20E-09 4.20E-09
Bis (2-chloroethyl) ether	ND<	3.64E-09 3.64E-09	ND<	3.70E-09 3.70E-09	ND<	4.20E-09
2-Chlorophenol 1,3-Dichlorobenzene	ND<	3.64E-09	ND<	3.70E-09	ND<	4.20E-09
1.4-Dichlorobenzene	ND<	3.64E-09	ND<	3.70E-09	ND<	4.20E-09
Benzyl Alcohol	ND<	3.64E-09	ND<	3.70E-09	ND<	4.20E-09
1,2-Dichlorobenzene	ND<	3.64E-09	ND<	3.70E-09	ND<	4.20E-09
2-Methyl phenol	ND<	3.64E-09 3.64E-09	ND<	3.70E-09 3.70E-09	ND<	4.20E-09 4.20E-09
bis (2-Chloroisopropyl) ether	ND<	3.64E-09	ND<	3,70E-09 3,70E-09	ND<	4.20E-09
4-Methylphenol n-Nitroso-di-n-propylamine	ND<	3.64E-09		3.70E-09	ND<	4.20E-09
Hexachloroethane	ND<	3.64E-09	ND<	3.70E-09	ND<	4.20E-09
Nitrobenzene	ND<	3.64E-09		3.70E-09	ND<	
Isophorone	ND<	3.64E-09	ND<	3.70E-09	ND<	4.20E-09
2-Nitrophenol	ND<	3.64E-09	ND<	3.70E-09 3.70E-09	ND<	4.20E-09 4.20E-09
2.4-Dimethylphenol	ND<	3.64E-09 1.75E-08	ND<	1.78E-08	ND<	2.02E-08
Benzoic acid Bis (2-chloroethoxy)-methane	ND<	3.64E-09	ND<	3.70E-09	ND<	4.20E-09
2.4-Dichlorophenol	ND<	3.64E-09	ND<	3.70E-09	ND<	4.20E-09
1,2,4-Trichlorobenzene	ND<	3.64E-09		3.70E-09	ND<	4.20E-09
Naphthalene	ND<	3.64E-09		3.70E-09	ND<	4.20E-09 4.20E-09
4-Chloroanaline	ND<	3.64E-09 3.64E-09		3.70E-09 3.70E-09	ND<	4.20E-09
Hexachlorobutadiene 4-chloro-3-methylphenol	ND<	3.64E-09	ND<	3.70E-09	ND<	4.20E-09
2-Methylpaphthalene	ND<	3.64E-09	ND<	3.70E-09	ND<	4.20E-09
Hexachlorocyclopentadiene	ND<	3.64E-09	ND<	3.70E-09	ND<	4.20E-09
2,4,6-Trichlorophenol	ND<	3.64E-09		3.70E-09	ND<	4.20E-09
2,4,5-Trichlorophenol	ND<	1.75E-08	ND<	1.78E-08 3.70E-09	ND<	2.02E-08 4.20E-09
2-Chloromaphthalene	ND<	3.64E-09 1.75E-08		1.78E-08		2.02E-08
2-Nitroaniline Dimethylphthalate	ND<	3.64E-09		3.70E-09	ND<	4.2013-09
Acenaphthylene	ND<	3.64E-09	ND<	3.70E-09	ND<	4.20E-09
2,6-Dinitrotoluene	ND<	3.64E-09		3.70E-09	ND<	4.20E-09
3-Nitroaniline	ND<	1.75E-08		1.78E-08	ND<	2.02E-08
Acenaphthene	ND<	3.64E-09 1.75E-08		3.70E-09 1.78E-08	ND<	4.20E-09 2.02E-08
2,4-Dinitrophenol 4-Nitrophenol	ND<	1.75E-08	ND<	1.78E-08	ND<	2.02E-08
Dibenzo furan	ND<	3.64E-09	ND<	3.70E-09	ND<	4.20E-09
2,4-Dinitrotoluene	ND<	3.64E-09	ND<	3.70E-09	ND<	4.20E-09
Diethylpthalate		9.70E-11		4.20E-10 J	ND<	4.20E-09
4-Chlorophenyl-phenyl ether	ND<	3.64E-09		3.70E-09	ND<	4.20E-09 4.20E-09
Fluorene	ND<	3.64E-09 1.75E-08	ND<	3.70E-09 1.78E-08	ND<	2.02E-08
4-Nitroaniline 4,6-Dinitro-2-methylphenol	ND<	1.75E-08	ND<	1.78E-08	ND<	2.02E-08
n-Nitrosodiphenylamine	ND<	3.64E-09	ND<	3.70E-09	ND<	4.20E-09
4-Bromophenyl-phenyl ether	ND<	3.64E-09	ND<	3.70E-09	ND<	4.20E-09
Hexachlorobenzene	ND<	3.64E-09	, ND<	3.70E-09 1.73E-10 J	ND<	4.20E-09 2.02E-08
Pentachlorophenol Phenanthrene	ND<	3.64E-11 3.64E-09	, ND<	3.70E-09		4.20E-09
Anthracene		3.64E-09		3.70E-09	ND<	4.20E-09
Di-n-butylphthalate	_	6.06E-11		3.70E-09		4.20E-09
Fluoranthene	ND<			3.70E-09		4.20E-09
Pyrene		3.64E-09		3.70E-09		4.20E-09
Butylbenzylphthalate	ND<	3.64E-09 7.27E-09		3.70E-09 7.40E-09	ND<	4.20E-09 8.40E-09
3,3'-Dichlorobenzidine Benzo(a)anthracene		3.64E-09		3.70E-11 J		4.20E-09
Chrysene		3.64E-09		2.47E-11 J	ND<	
bis(2-Ethylhexyl)phthalate		2.79E-10		1.36E-10 JB		1.54E-10 JB
Di-n-octylphthalate		3.64E-09		2.47E-11 J	ND<	
Benzo(b)fluoranthene		3.64E-09		3.70E-09		4.20E-09 4.20E-09
Benzo(k)fluoranthene	ND<	3.64E-09 3.64E-09		3.70E-09 3.70E-09		4.20E-09 4.20E-09
Benzo(a)pyrene Indeno(1,2,3-cd)pyrene		3.64E-09		3.70E-09		4.20E-09
Dibenzo(a,h)anthracene		3.64E-09		3.70E-09	ND<	4.20E-09
Benzo(g,h,i)perylene		3.64E-09			ND<	4.20E-09
Carbazole		3.64E-09		3.70E-09	ND<	4.20E-09
Diesel Range Organics (1)	ND<	7.27E-08		NA		NA

[&]quot;ND<(....)" = Analyte detection limit value.

B=Detected in the field blank in quantities greater than the sample, therefore sample values are not blank corrected.

J=Detected in the samples in quantities less than the calibration detection limit.

(1) Diesel range organics analysis performed on T1 sample only.

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA

HOT GAS TEST PROGRAM SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS

TEST DATA Run number		T1	T2		Т3
Location			TERBURNER DISCHA	RGE	
Date Time period		01 - 31 -9 6 1834-0110	02 - 02 -9 6 1406–2031		02-04-96 1409-2036
Time period		1034-0110	1400-2031		1407-2030
SEMIVOLATILE ORGANICS EMISSION RESUL					
Phenol		2.41E-04	ND< 2.36E-04		2.45E-04
Bis (2-chloroethyl) ether		2.41E-04 2.41E-04	ND< 2.36E-04 ND< 2.36E-04		2.45E-04 2.45E-04
2-Chlorophenol 1,3-Dichlorobenzene		2.41E-04	ND< 2.36E-04		2.45E-04
1,4-Dichlorobenzene		2.41E-04	ND< 2.36E-04		2.45E-04
Benzyl Alcohol	ND<	2.41E-04	ND< 2.36E-04		2.45E-04
1,2-Dichlorobenzene		2.41E-04	ND< 2.36B-04		2.45E-04
2-Methylphenol		2.41E-04	ND< 2.36E-04		2.45E-04
bis (2-Chloroisopropyl) ether	ND<	2.41E-04 2.41E-04	ND< 2.36E-04 ND< 2.36E-04		2.45E-04 2.45E-04
4-Methylphenol n-Nitroso-di-n-propylamine		2.41E-04	ND< 2.36E-04		2.45E-04
Hexachloroethane		2.41E-04	ND< 2.36E-04		2.45E-04
Nitrobenzene	ND<	2.41E-04	ND< 2.36E-04	ND<	2.45E-04
Isophorone		2.41E-04	ND< 2.36E-04		2.45E-04
2-Nitrophenol		2.41E-04	ND< 2.36E-04		2.45E-04
2.4-Dimethylphenol	ND<	2.41E-04 1.16E-03	ND< 2.36E-04 ND< 1.13E-03		2.45E-04 1.18E-03
Benzoic acid Bis (2-chloroethoxy)-methane		2.41E-04	ND< 2.36E-04		2.45E-04
2,4-Dichlorophenol		2.41E-04	ND< 2.36E-04		2.45E-04
1,2,4-Trichlorobenzene	ND<	2.41E-04	ND< 2.36E-04		2.45E-04
Naphthalene		2.41E-04	ND< 2.36E-04		2.45E-04
4-Chloroanaline		2.41E-04 2.41E-04	ND< 2.36E-04 ND< 2.36E-04		2.45E-04 2.45E-04
Hexachlorobutadiene 4-chloro-3-methylphenol	ND<	2.41E-04 2.41E-04	ND< 2.36E-04		2.45E-04
2-Methylnaphthalene		2.41E-04	ND< 2.36E-04		2.45E-04
Hexachlorocyclopentadiene		2.41E-04	ND< 2.36E-04	ND<	2.45E-04
2,4,6-Trichlorophenol		2.41E-04	ND< 2.36E-04		2.45E-04
2,4,5-Trichlorophenol	ND<	1.16E-03	ND< 1.13E-03		1.18E-03
2-Chloronaphthalene		2.41E-04 1.16E-03	ND< 2.36E-04 ND< 1.13E-03		2.45E-04 1.18E-03
2-Nitroaniline Dimethylphthalate		2.41E-04	ND< 2.36E-04		2.45E-04
Acenaphthylene		2.41E-04	ND< 2.36E-04		2.45E-04
2.6-Dinitrotoluene		2.41E-04	ND< 2.36E-04		2.45E-04
3-Nitroaniline		1.16E-03	ND< 1.13E-03		1.18E-03
Acenaphthene	ND<	2.41E-04	ND< 2.36E-04	ND<	
2,4-Dinitrophenol 4-Nitrophenol	ND<	1.16E-03 1.16E-03	ND< 1.13E-03 ND< 1.13E-03		1.18E-03 1.18E-03
Dibenzo furan		2.41E-04	ND< 2.36E-04		2.45E-04
2,4-Dinitrotoluene		2.41E-04	ND< 2.36E-04		2.45E-04
Diethylpthalate		6.42E-06 J	2.67E-05 J		2.45E-04
4-Chlorophenyl-phenyl ether		2.41E-04	ND< 2.36B-04		2.45E-04
Fluorene		2.41E-04	ND< 2.36E-04 ND< 1.13E-03		2.45E-04 1.18E-03
4-Nitroaniline 4,6-Dinitro-2-methylphenol		1.16E-03 1.16E-03	ND< 1.13E-03		1.18E-03
n-Nitrosodiphenylamine		2.41E-04	ND< 2.36E-04		2.45E-04
4-Bromophenyl-phenyl ether		2.41E-04	ND< 2.36E-04		2.45E-04
Hexachlorobenzene	ND<	2.41E-04	ND< 2.36E-04		2.45E-04
Pentachlorophenol	3775	2.41E-06 J	1.10E-05 J		1.18E-03
Phenanthrene Anthracene		2.41E-04 2.41E-04	ND< 2.36E-04 ND< 2.36E-04	ND<	2.45E-04 2.45E-04
Di-n-butylphthalate	NIX	4.01E-06 J	ND< 2.36E-04		2.45E-04
Fluoranthene	ND<	2.41E-04	ND< 2.36B-04		2.45E-04
Pyrene	ND<	2.41E-04	ND< 2.36E-04		2.45E-04
Butylbenzylphthalate		2.41E-04	ND< 2.36E-04		2.45E-04
3,3'-Dichlorobenzidine		4.82E-04	ND< 4.71E-04		4.90E-04
Benzo(a)anthracene Chrysene		2.41E-04 2.41E-04	2.36E-06 J 1.57E-06 J		2.45E-04 2.45E-04
bis(2-Ethylhexyl)phthalate	140	1.85E-05 JB	8.64E-06 JB		8.99E-06 JI
Di-n-octylphthalate	ND<	2.41E-04	1.57E-06 J	ND<	
Benzo(b)fluoranthene	ND<	2.41E-04	ND< 2.36E-04		2.45E-04
Benzo(k)fluoranthene		2.41E-04	ND< 2.36E-04		2.45E-04
Benzo(a)pyrene		2.41E-04	ND< 2.36E-04		2.45E-04
Indeno(1,2,3-cd)pyrene Dibenzo(a,h)anthracene		2.41E-04 2.41E-04	ND< 2.36E-04 ND< 2.36E-04		2.45E-04 2.45E-04
Benzo(a,h,i)perylene		2.41E-04 2.41E-04	ND< 2.36E-04		2.45E-04 2.45E-04
	10~	_,,	TW - DIVID OT	10	J. 102 04
Carbazole	ND<	2.41E-04	ND< 2.36E-04	ND<	2.45E-04

[&]quot;ND<(....)" = Analyte detection limit value.

B=Detected in the field blank in quantities greater than the sample, therefore sample values are not blank corrected.

J=Detected in the samples in quantities less than the calibration detection limit.

(1) Diesel range organics analysis performed on T1 sample only.

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA HOT GAS TEST PROGRAM

SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS

TEST DATA						
Run number		T1		T2		T3
Location			AFTERBURN	VER DISC	HARGE	
Date		01 -31-9 6		02 -02-9 6		02-04-96
Time period		1834-0110	1	406–2031		1409–2036
SEMIVOLATILE ORGANICS CONCENTRATION:	S, ppb/v					
Phenol	ND<	14.89	ND<	15.16	ND<	17.20
Bis (2-chloroethyl) ether	ND<	9.80	ND<	9.97	ND<	11.32
2-Chlorophenol	ND<	10.90	ND<	11.10	ND<	12.59 11.01
1,3-Dichlorobenzene	ND<	9.53 9.53	ND<	9.70 9.70	ND<	11.01
1,4-Dichlorobenzene	ND<	12.959	ND<	13.19	ND<	14.966
Benzyl Alcohol 1,2-Dichlorobenzene	ND<	9.53	ND<	9.70	ND<	11.01
2-Methylphenol	ND<	12.96	ND<	13.19	ND<	14.97
bis (2-Chloroisopropyl) ether	ND<	8.24	ND<	8.39	ND<	9.52
4-Methylphenol	ND<	12.96	ND<	13.19	ND<	14.97
n-Nitroso-di-n-propylamine	ND<	10.76	ND<	10.95	ND<	12.43
Hexachloroethane	ND<	5.92	ND< ND<	6.03 11.59	ND<	6.84 13.15
Nitrobenzene	ND<	11.38 10.14	ND<	10.32	ND<	11.71
Isophorone 2-Nitrophenol	ND<	10.17	ND<	10.25	ND<	11.63
2.4-Dimethylphenol	ND<	11.47	ND<	11.67	ND<	13.25
Benzoic acid	ND<	55.08	ND<	56.07	ND<	63.61
Bis (2-chloroethoxy)-methane	ND<	8.10	ND<	8.24	ND<	9.35
2,4-Dichlorophenol	ND<	8.60	ND<	8.75	ND<	9.93
1,2,4-Trichlorobenzene	ND≺ ND≺	7.72 10.93	ND<	7.86 11.128	ND<	8.92 12.626
Naphthalene 4-Chloroanaline	ND<	10.93	ND<	11.128	ND<	12.69
Hexachlorobutadiene	ND<	5,37	NID<	5.47	ND<	6.21
4-chloro-3-methylphenol	ND<	9.83	ND<	10.00	ND<	11.35
2-Methylmaphthalene	ND<	9.855	ND<	10.031	ND<	11.381
Hexachlorocyclopentadiene	ND<	5.14	ND<	5.23	ND<	5.93
2,4,6-Trichlorophenol	ND<	7.10	ND<	7.22 34.68	ND<	8.20 39.34
2,4,5-Trichlorophenol	ND<	34.07 8.62	ND<	8.77	ND<	9.95
2-Chloronaphthalene 2-Nitroaniline	ND<	48,70	ND<	49.57	ND<	56.24
Dimethylphthalate	ND<	7.22	ND<	7.35	ND<	8.33
Acenaphthylene	ND<	9.21	ND<	9.37	ND<	10.63
2,6-Dinitrotoluene	ND<	7.69	ND<	7.83	ND<	8.89
3-Nitroaniline	ND<	48.70	ND<	49.57	ND<	56.24
Acenaphthene	ND<	9.09	ND<	9.25 37.19	ND<	10.49 42.19
2.4-Dinitrophenol	ND<	36.53 48.35	ND<	49.22	ND<	55.84
4-Nitrophenol Dibenzofuran	ND<	8.33	ND<	8.48	ND<	9.62
2.4-Dinitrotoluene	ND<	7.69	ND<	7.83	ND<	8.89
Diethylpthalate		0.168	J	0.73 J	ND<	7.28
4-Chlorophenyl-phenyl ether	ND<	6.87	ND<	6.99	ND<	7.93
Fluorene	ND<	8.43	ND<	8.58	ND<	9.74
4-Nitroaniline	ND<	48.70 33.96	ND<	49.57 34.56	ND<	56.24 39.21
4,6-Dinitro-2-methylphenol n-Nitro sodiphenylamine	ND<	7.07	ND<	7.20	ND<	8.16
4-Bromophenyl-phenyl ether	ND<	5.65	ND<	5.75	ND<	6.53
Hexachlorobenzene	ND<	4.92	ND<	5.01	ND<	5.68
Pentachlo rophenol		0.05		0.25 J	ND<	29.17
Phenanthrene	ND<	7.862	ND<	8.00	ND<	9.08
Anthracene	ND<	7.86	ND<	8.00	ND<	9.08 5.81
Di-n-butylphthalate	ND<	0.08 6.929		5.12 7. 0 5	ND< ND<	8.00
Fluoranthene Pyrene	ND<	6.93		7.05	ND<	8.00
Butylbenzylphthalate	ND<			4.566	ND<	5.1808
3,3'-Dichlorobenzidine	ND<	11.07		11.27	ND<	12.79
Benzo(a)anthracene	ND<	6.14		0.06 J	ND<	7.09
Chrysene	ND<			0.04 J	ND<	7.09
bis(2-Ethylhexyl)phthalate		0.28		0.13 JB		0.15 JB
Di-n-octylphthalate	ND<	3.59 5.55		0.02 J 5.65	ND<	4.14 6.41
Benzo(b)fluoranthene Benzo(k)fluoranthene	ND<			5.65	ND<	6.41
Benzo(a)pyrene	ND<	5.55		5.65	ND<	6.41
Indeno(1,2,3-cd)pyrene	ND<	5.07		5.16	ND<	5.86
Dibenzo(a,h)anthracene	ND<	5.03	ND<	5.12	ND<	5.81
Benzo(g,h,i)perylene	ND<			5.16	ND<	5.86
Carbazole	ND<			8.53	ND<	9.68
Diesel Range Organics (1)	ND<	196.98		NA		NA

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[&]quot;ND<(....)" = Analyte detection limit value.

B=Detected in the field blank in quantities greater than the sample, therefore sample values are not blank corrected.

J=Detected in the samples in quantities less than the calibration detection limit.

(1) Diesel range organics analysis performed on T1 sample only.

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA HOT GAS TEST PROGRAM

SUMMARY OF SEMIVOLATILE ORGANIC COMPOUNDS TEST DATA AND TEST RESULTS

TEST DATA						
Run number		Ti	AFFEDRID	T2 NER DISCHAR	Œ	T3
Location Date		01-31-96	AFIERBUR	02-02-96		02-04-96
Time period		1834-0110		1406-2031		1409-2036
-						
SEMIVOLATILE ORGANICS EMISSION RESULTS, Phenol	g/sec ND<	3.03E-05	ND<	2.97E-05	ND<	3.09E-05
Bis (2-chloroethyl) ether	ND<	3.03E-05	ND<	2.97E-05	ND<	3.09E-05
2-Chlorophenol	ND<	3.03E-05	ND<		ND<	3.09E-05
1,3-Dichlorobenzene	ND<	3.03E-05			ND<	3.09E-05
1,4-Dichlorobenzene	ND<	3.03E-05				3.09E-05
Benzyl Alcohol	ND<	3.03E-05 3.03E-05			ND<	3.09E-05 3.09E-05
1,2-Dichlorobenzene 2-Methylphenol	ND<	3.03E-05			ND<	3.09E-05
bis (2-Chloroisopropyl) ether	ND<	3.03E-05			ND<	3.09E-05
4-Methylphenol	ND<	3.03E-05	ND<	2.97E-05	ND<	3.09E-05
n-Nitroso-di-n-propylamine	ND<	3.03E-05			ND<	3.09E-05
Hexachloroethane	ND<	3.03E-05			ND<	3.09E-05
Nitrobenzene	ND<	3.03E-05 3.03E-05			ND<	3.09E-05 3.09E-05
Isophorone 2-Nitrophenol	ND<	3.03E-05			ND<	3.09E-05
2,4-Dimethylphenol	ND<	3.03E-05	ND<	2.97E-05	ND<	3.09E-05
Benzoic acid	ND<	1.46E-04				1.48E-04
Bis (2-chloroethoxy)-methane	ND<	3.03E-05				3.09E-05
2,4-Dichlorophenol	ND<	3.03E-05				3.09E-05 3.09E-05
1,2,4-Trichlorobenzene Naphthalene	ND<	3.03E-05 3.03E-05				3.09E-05
4-Chloroanaline	ND<	3.03E-05		2.97E-05	ND<	3.09E-05
Hexachlorobutadiene	ND<	3.03E-05	ND<	2.97E-05	ND<	3.09E-05
4-chloro-3-methylphenol	ND<	3.03E-05			ND<	3.09E-05
2-Methylnaphthalene	ND<	3.03E-05		2.97E-05 2.97E-05	ND<	3.09E-05 3.09E-05
Hexachlorocyclopentadiene 2,4,6-Trichlorophenol	ND<	3.03E-05 3.03E-05		2.97E-05	ND<	3.09E-05
2,4,5-Trichlorophenol		1.46E-04		1.42E-04	ND<	1.48E-04
2-Chloronaphthalene	ND<	3.03E-05	ND<	2.97E-05	ND<	3.09E-05
2-Nitroaniline		1.46E-04		1.42E-04		1.48E-04
Dimethylphthalate	ND<	3.03E-05		2.97E-05	ND<	
Acenaphthylene	ND<	3.03E-05 3.03E-05		2.97E-05 2.97E-05		3.09E-05 3.09E-05
2,6-Dinitrotoluene 3-Nitroaniline	ND<	1.46E-04		1.42E-04	ND<	1.48E-04
Acenaphthene	ND<	3.03E-05		2.97E-05		3.09E-05
2,4-Dinitrophenol	ND<	1.46E-04	ND<	1.42E-04	ND<	1.48E-04
4-Nitrophenol	ND<	1.46E-04		1.42E-04	ND<	1.48E-04
Dibenzo furan	ND<	3.03E-05	ND<		ND<	3.09E-05 3.09E-05
2,4-Dinitrotoluene Diethylpthalate	ND<	3.03E-05 8.09E-07		2.97E-05 3.36E-06 J	ND<	3.09E-05
4-Chlorophenyl-phenyl ether	ND<	3.03E-05		2.97E-05	ND<	
Fluorene	ND<	3.03E-05	ND<	2.97E-05	ND<	3.09E-05
4-Nitroaniline	ND<	1.46E-04		1.42E-04		1.48E-04
4,6-Dinitro-2-methylphenol	ND<	1.46E-04		1.42E-04		1.48E-04 3.09E-05
n-Nitrosodiphenylamine 4-Bromophenyl-phenyl ether	ND<	3.03E-05 3.03E-05	ND<		ND<	3.09E-05
Hexachlorobenzene	ND<	3.03E-05		2.97E-05	ND<	3.09E-05
Pentachlorophenol		3.03E-07		1.38E-06 J	ND<	1.48E-04
Phenanthrene	ND<	3.03E-05	ND<	2.97E-05	ND<	3.09E-05
Anthracene	ND<	3.03E-05		2.97E-05		3.09E-05
Di-n-butylphthalate	ND<	5.06E-07 3.03E-05		2.97E-05 2.97E-05		3.09E-05 3.09E-05
Fluoranthene Pyrene	ND<			2.97E-05	ND<	
Butylbenzylphthalate	ND<	3.03E-05		2.97E-05	ND<	
3,3'-Dichlorobenzidine	ND<	6.07B-05	ND<	5.94E-05	ND<	
Benzo(a)anthracene	ND<			2.97E-07 J	ND<	
Chrysene	ND<	3.03E-05		1.98E-07 J 1.09E-06 JB	ND<	3.09E-05
bis(2-Ethylhexyl)phthalate Di-n-octylphthalate	ND	2.33E-06 3.03E-05		1.98E-07 J	ND<	1.13E-06 JB 3.09E-05
Benzo(b)fluoranthene		3.03E-05		2.97E-05		3.09E-05
Benzo(k)fluoranthene		3.03E-05		2.97E-05		3.09E-05
Benzo(a)pyrene	ND<	3.03E-05	ND<	2.97B-05	ND<	
Indeno(1,2,3-cd)pyrene		3.03E-05		2.97E-05	ND<	3.09E-05
Dibenzo(a,h)anthracene		3.03E-05		2.97E-05 2.97E-05	ND<	3.09E-05 3.09E-05
Benzo(g,h,i)perylene Carbazole		3.03E-05 3.03E-05		2.97E-05 2.97E-05		3.09E-05
Diesel Range Organics ⁽¹⁾		6.07E-04		NA		NA NA
						-

[&]quot;ND<(....)" = Analyte detection limit value.

B=Detected in the field blank in quantities greater than the sample, therefore sample values are not blank corrected.

J=Detected in the samples in quantities less than the calibration detection limit.

(1) Diesel range organics analysis performed on T1 sample only.

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA HOT GAS TEST PROGRAM SUMMARY OF DIOXIN AND FURAN TEST DATA AND TEST RESULTS

TEST DATA		_	
Test run number .	T1	T2	T3
Test location		RBURNER DISCHA	
Test date	01 -31-9 6	02-02-96	02-04-96
Test time period	1834-0121	1405-2038	1410-2045
SAMPLING DATA			
Sampling duration, min.	360.0	360.0	360.0
Nozzle diameter, in.	0.620	0.620	0.620
Cross sectional nozzle area, sq.ft.	0.002097	0.002097	0.002097
Barometric pressure, in. Hg	29.73	29.59	30.28
Avg. orifice press. diff., in H ₂ O	0.83	0.77	0.65
Avg. dry gas meter temp, deg F	49	50	49
Avg. abs. dry gas meter temp., deg. R	509	510	509
Total liquid collected by train, ml	341.1	299.4	252.8
Std. vol. of H ₂ O vapor coll., cu.ft.	16.1	14.1	11.9
Dry gas meter calibration factor	0.993	0.993	0.993
Sample vol. at meter cond., dcf	176.066	169.257	153.896
Sample vol. at std. cond., dscf(1)	180.526	172.471	160.738
Percent of isokinetic sampling	100.6	102.1	99.5
GAS STREAM COMPOSITION DATA			
CO ₂ , % by volume, dry basis	5.7	5.8	6.1
O ₂ , % by volume, dry basis	12.1	11.9	11.9
🐧, % by volume dry basis	0.0	0.0	0.0
N ₂ , % by volume, dry basis	82.2	82.3	82.0
Molecular wt. of dry gas, lb/lb mole	29.40	29.41	29.45
H ₂ O vapor in gas stream, prop. by vol.	0.082	0.076	0.069
Mole fraction of dry gas	0.918	0.924	0.931
Molecular wt. of wet gas, lb/lb mole	28.5	28.5	28.7
GAS STREAM VELOCITY AND VOLUMETRIC FLOW DATA	A		
Static pressure, in. H ₂ O	-0.10	-0.10	-0.10
Static pressure, in. Hg	-0.007	-0.007	-0.007
Absolute pressure, in. Hg	29.72	29.58	30.27
Avg. temperature, deg. F	1541	1517	1509
Avg, absolute temperature, deg.R	2001	1977	1969
Pitot tube coefficient	0.84	0.84	0.84
Total number of traverse points	12	12	12
Avg. gas stream velocity, ft./sec.	16.5	15.3	14.1 4.59
Stack/duct cross sectional area, sq.ft.	4.59	4.59	4.59 3890
Avg. gas stream volumetric flow, wacf/min.	4530	4210 1030	3890 980
Avg. gas stream volumetric flow, dscf/min.	1090	1030	900

⁽¹⁾ Standard conditions = 68 degrees F. (20 deg. C.) and 29.92 in Hg (760 mm Hg)

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA HOT GAS TEST PROGRAM

SUMMARY OF DIOXIN AND FURAN TEST DATA AND TEST RESULTS

TEST DATA						
Test run number		T1		T2		T3
Test location		AFT	ERBUR	NER DISCH	IARGE	
Test date		01 -31-9 6		02-02-96		02-04-96
Test time period		1834-0121		1405-2038		1410-2045
Test time period						
TOXICTLY EQUIVALENCY EMISSIONS (1-TEF#/89),	ng/dscm					
2,3,7,8-TCDD		7.82E-03		4.09E-03		4.39E-03
1,23,7,8-PeCDD		1.56E-02		7.17E-03		1.21E-02
1,23,4,7,8 -H xCDD		2.54E-03		1.23E-03		1.32E-03
1,2,3,6,7,8-HxCDD		2.93E-03		1.02E-03		1.54E-03
1,2,3,7,8,9-HxCDD		6.45E-03		2.25E-03		3.95E-03
1,23,4,67,8 -1.p CDD		2.35E-03		6.96E-04		1.60E-03
Total TCDD		0 (3)		0 (3)		0 (3)
Total PeCDD		0 (3)		0 (3)		0 (3)
Total HxCDD		0 (3)		0 (3)		0 (3)
Total HpCDD		0 (3)		0 (3)		0 (3)
OCDD '		6.06E-04		2.25E-04		4.39E-04
2.3.7.8-TCDF	ND<	1.37E-04		2.05E-04		2.20E-04
1,23,7,8-PeCDF	ND<	1.96E-04		1.02E-04		2.20E-04
2,3,4,7,8-PeCDF	ND<	1.96E-03		3.07E-03		2.20E-03
1,2,3,4,7,8-HxCDF		3.91E-04		8.19E-04		1.32E-03
1,23,6,7,8-HxCDF		1.96E-04		4.09E-04		6.59E-04
2,3,4,6,7,8-HxCDF		3.91E-04		6.14E-04		6.59E-04
1,2,3,7,8,9-HxCDF	ND<	1.96E-04	ND<	4.09B-04	ND<	2.20E-04
1,2,3,4,6,7,8 -H pCDF		9.78E-05		1.64E-04		2.20E-04
1,2,3,4,7,8,9 -1 p CDF		1.96E-05		2.05E-05		4.39B-05
Total TCDF .		0 (3)		0 (3)		0 (3)
Total PeCDF		0 (3)		0 (3)		0 (3)
Total HxCDF		0 (3)		0 (3)		0 (3)
Total HpCDF		0 (3)		0 (3)		0 (3)
OCDF		1.56B-05		1.02E-05		1.10E-05
TOTAL 2,3,7,8-TCDD EQUIVALENTS, ng/dscm (1)	≤	4.20E-02	≤	2.25B-02	≤	3.11E-02
DETECTED TOXICITY EQUIVALENCY EMISSIONS (F	-TEFs/89),	ng/dscm				
2.3.7.8-TCDD		7.82E-03		4.09E-03		4.39E-03
1,2,3,7,8-PeCDD		1.56E-02		7.17E-03		1.21E-02
1,23,4,7,8-HxCDD		2.54E-03		1.23E-03		1.32E-03
1,23,6,7,8-HxCDD		2.93E-03		1.02E-03		1.54E-03
1,23,7,8,9-HxCDD		6.45E-03		2.25E-03		3.95E-03
1,23,4,67,8-HpCDD		2.35E-03		6.96E-04		1.60E-03
OCDD		6.06E-04		2.25E-04		4.39E-04
2,3,7,8-TCDF		ND		2.05B-04		2.20E-04
1,2,3,7,8-PeCDF		ND		1.02E-04		2.2016-04
2,3,4,7,8-PeCDF		ND		3.07B-03		2.20E-03
1,2,3,4,7,8-HxCDF		3.91E-04		8.19E-04		1.32E-03
1,2,3,6,7,8-HxCDF		1.96E-04		4.0913-04		6.59E-04
2,3,4,6,7,8-HxCDF		3.91E-04		6.14E-04		6.59E-04
1,23,7,8,9-HxCDF		ND		ND		ND
1,2,3,4,6,7,8 -Гф СDF		9.78E-05		1.64E-04		2.20B-04
1,2,3,4,7,8,9 11 pCDF		1.96E-05		2.05E-05		4.39B-05
OCDF		1.56E-05		1.02E-05		1.10B-05
DETECTED TOTAL 2,3,7,8-TCDD EQUIVALENTS, ng/d	lscm ⁽²⁾	3.95E-02		2.21B-02		3.09E-02

⁽¹⁾ Calculated Total 2,3,7,8-TCDD equivalents based on all detected and non-detected values. (2) Calculated Total 2,3,7,8-TCDD equivalents based on detected values only. (3) Zero value denotes no toxic equivalency.

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA HOT GAS TEST PROGRAM SUMMARY OF DIOXIN AND FURAN TEST DATA AND TEST RESULTS

MICONITY A ITA						
TEST DATA Test run number		T1		T2		T3
Test location			RBUR	NER DISCH	ARGE	
Test date		01 -31-9 6		02-02-96		02-04-96
Test time period		1834-0121		1405-2038		1410-2045
1000 time posterio						
TOXICITY EQUIVALENCY EMISSIONS (I-TEF4/89), lb/l	br					
2,3,7,8-TCDD		3.20E-11		1.58E-11		1.62E-11
1,2,3,7,8-PeCDD		6.39E-11		2.76E-11		4.44 E- 11
1,2,3,4,7,8-HxCDD		1.04E-11		4.73E-12		4.85E-12
1,2,3,6,7,8-HxCDD		1.20E-11		3.94E-12		5.66E-12
1,2,3,7,8,9 -Hx CDD		2.64E-11		8.67E-12		1.45E-11
1,2,3,4,6,7,8 -Hp CDD		9.59E-12		2.68E-12		5.90E-12
Total TCDD		0 (3)		0 (3)		0 (3)
Total PeCDD		0 (3)		0 (3)		0 (3)
Total HxCDD		0 (3)		0 (3)		0 (3)
Total HpCDD		0 (3)		0 (3)		0 (3)
OCDD		2.48E-12		8.67E-13		1.62E-12
0.0.7.0 TKTDF	NTD	5.59E-13		7.88E-13		8.08E-13
2,3,7,8-TCDF	ND<			3.94E-13		8.08E-13
1,2,3,7,8-PeCDF		7.99E-12		1.18E-11		8.08E-12
2,3,4,7,8-PeCDF 1,2,3,4,7,8-HxCDF	1101	1.60E-12		3.15E-12		4.85E-12
1,23,6,7,8-HxCDF		7.99E-13		1.58E-12		2.42E-12
2.3.4.6.7.8-HxCDF		1.60E-12		2.36E-12		2.42E-12
1,23,7,8,9-HxCDF	ND<	7.99E-13	ND<	1.58E-12	ND<	8.08E-13
1,2,3,4,6,7,8-HpCDF		3.99E-13		6.30E-13		8.08E-13
1,2,3,4,7,8,9-HpCDF		7.99 E- 14		7.88E-14		1.62E-13
Total TCDF		0 (3)		0 (3)		0 (3)
Total PeCDF		0 (3)		0 (3)		0 (3)
Total HxCDF		0 (3)		0 (3)		0 (3)
Total HpCDF		0 (3)		0 (3)		0 (3)
OCDF		6.39E-14		3.94E-14		4.04E-14
TOTAL 2,3,7,8-TCDD EQUIVALENTS, 1b/lm(1)	≤	1.71E-10	≤	8.66E-11	≤	1.14E-10
DEIECTED TOXICTLY EQUIVALENCY EMISSIONS (F-TEI	Fs/89),	lb/hr				
2,3,7,8-TCDD		3.20E-11		1.58E-11		1.62E-11
1,23,7,8-PeCDD		6.39E-11		2.76E-11		4.44E-11
1,23,4,7,8-HxCDD		1.04E-11		4.73E-12		4.85E-12
1,2,3,6,7,8-HxCDD		1.20E-11		3.94E-12		5.66E-12
1,2,3,7,8,9-HxCDD		2.64E-11		8.67E-12		1.45E-11
1,2,3,4,6,7,8-HpCDD		9.59E-12		2.68E-12		5.90E-12
OCDD		2.48E-12		8.67E-13		1.62E-12
2,3,7,8-TCDF		ND		7.88E-13		8.08E-13
1,23,7,8-PeCDF		ND		3.94E-13		8.08E-13
2,3,4,7,8-PeCDF		ND		1.18E-11		8.08E-12
1,2,3,4,7,8-HxCDF		1.60E-12		3.15E-12		4.85E-12
1,2,3,6,7,8-HxCDF		7.99E-13		1.58B-12		2.42E-12
2,3,4,6,7,8-HxCDF		1.60E-12		2.36E-12		2.42E-12
1,23,7,8,9-HxCDF		ND		ND		ND
1,2,3,4,6,7,8 -Hp CDF		3.99E-13		6.30E-13		8.08E-13
1,2,3,4,7,8,9 -Hp CDF		7.99E-14		7.88E-14		1.62E-13
OCDF		6.39E-14		3.94E-14		4.04B-14
DETECTED TOTAL 2,3,7,8-TCDD EQUIVALENTS, $lb/hr^{(2)}$		1.61E-10		8.50E-11		1.14E-10

⁽¹⁾ Calculated Total 2,3,7,8-TCDD equivalents based on all detected and non-detected values.
(2) Calculated Total 2,3,7,8-TCDD equivalents based on detected values only.
(3) Zero value denotes no toxic equivalency.

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA HOT GAS TEST PROGRAM SUMMARY OF DIOXIN AND FURAN TEST DATA AND TEST RESULTS

TEST DATA				
Test run number		T 1	T2	Т3
Test location		AFTE	RBURNER DISCHA	
Test date		01-31-96	02-02-96	02-04-96
=		1834-0121	1405-2038	1410-2045
Test time period		1634-0121	1403-2038	1410-2043
DIOXIN LABORATORY REPORT DAT	A, ng			
2,3,7,8-TCDD		0.040	0.020	. 0.020
1,2,3,7,8-PeCDD		0.160	0.070	0.110
1,2,3,4,7,8 -H xCDD		0.130	0.060	0.060
1,2,3,6,7,8-HxCDD		0.150	0.050	0.070
1,2,3,7,8,9-HxCDD		0.330	0.110	0.180
1,2,3,4,6,7,8 -Hp CDD		1.200	0.340	0.730
Total TCDD		0.840	0.360	0.260
Total PeCDD		1.900	0.790	1.300
Total HxCDD		2.600	0.960	1.400
Total HpCDD		2.800	0.750	1.900
OCDD		3.100	1.100	2.000
Total PCDD		11.240	3.960	6.860
DIOXIN CONCENTRATION, ppb/v	mole wt.			
2,3,7,8-TCDD	321.9744	5.85E-07	3.06E-07	3.28E-07
1,2,3,7,8-PeCDD	356.4195	2.11E-06	9.67E-07	1.63E-06
1,2,3,4,7,8-HxCDD	390.8646	1.57E-06	7.5 6E -07	8.11E-07
1,2,3,6,7,8-HxCDD	390.8646	1.81E-06	6.30E-07	9.47E-07
1,2,3,7,8,9-HxCDD	390.8646	3.97E-06	1.39E-06	2.43E-06
1,2,3,4,6,7,8 -Hp CDD	4253097	1.33E-05	3.94E-06	9.07E-06
Total TCDD	321.9744	1.23E-05	5.51E-06	4.27E-06
Total PeCDD	356.4195	2.51E-05	1.09E-05	1.93E-05
Total HxCDD	390.8646	3.13E-05	1.21E-05	1.89E-05
Total HpCDD	425.3097	3.10E-05	8.69E-06	2.36E-05
OCDD	459.7548	3.17E-05	1.18E-05	2.30E-05
Total PCDD	321.9744	1.64B-04	6.06E-05	1.13E-04
DIOXIN EMISSIONS, lb/dscf				
2,3,7,8-TCDD		4.88E-16	2.56E-16	2.74E-16
1,2,3,7,8-PeCDD		1.95E-15	8.95E-16	1.51E-15
1,2,3,4,7,8-HxCDD		1.59E-15	7.67E-16	8.23E-16
1,2,3,6,7,8-HxCDD		1.83E-15	6.39E-16	9.60E-16
1,2,3,7,8,9-HxCDD		4.03E-15	1.41E-15	2.47E-15
1,2,3,4,6,7,8 -H pCDD		1.47E-14	4.35E-15	1.00B-14
Total TCDD		1.03E-14	4.60B-15	3.57E-15
Total PeCDD		2.32E-14	1.01E-14	1.78E-14
Total HxCDD		3.18E-14	1.23E-14	1.92E-14
Total HpCDD		3.42E-14	9.59E-15	2.61E-14
OCDD		3.79E-14	1.41E-14	2.74E-14
Total PCDD		1.37E-13	5.0 6 E-14	9.41E-14

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA HOT GAS TEST PROGRAM

SUMMARY OF DIOXIN AND FURAN TEST DATA AND TEST RESULTS

TEST DATA		m a	TD2
Test run number	T1	T2	T3
Test location		RBURNER DISCHA	
Test date	01 -31-9 6	0 2- 02 -9 6	02-04-96
Test time period	1834-0121	1405-2038	1410-2045
DIOXIN CONCENTRATION, ng/dscm			
2,3,7,8-TCDD	7.82E-03	4.09E-03	4.39E-03
1,23,7,8-PeCDD	3.13E-02	1.43E-02	2.42E-02
1,2,3,4,7,8-HxCDD	2.54E-02	1.23E-02	1.32E-02
1,2,3,6,7,8-HxCDD	2.93E-02	1.02E-02	1.54E-02
1,23,7,8,9-HxCDD	6.4533-02	2.25E-02	3.95E-02
1,2,3,4,6,7,8 -H pCDD	2.35E-01	6.96B-02	1.60E-01
Total TCDD	1.64E-01	7.37E-02	5.71E-02
Total PeCDD	3.72B-01	1.62E-01	2.86E-01
Total HxCDD	5.09E-01	1.97E-01	3.08E-01
Total HpCDD	5.48E-01	1.54E-01	4.17E-01
OCDD	6.06E-01	2.25E-01	4.39E-01
Total PCDD	2.20E+00	8.11E-01	1.51E+00
DIOXIN EMISSIONS, lb/hr			
2,3,7,8-TCDD	3.20E-11	1.58E-11	1.62E-11
1.2.3.7.8-PeCDD	1.28E-10	5.52E-11	8.89E-11
1,2,3,4,7,8-HxCDD	1.04E-10	4.73E-11	4.85E-11
1,2,3,6,7,8-HxCDD	1.20E-10	3.94E-11	5.668-11
1,2,3,7,8,9-HxCDD	2.64E-10	8.67E-11	1.45E-10
1,2,3,4,6,7,8 -Hp CDD	9.59B -1 0	2.68E-10	5.90E-10
Total TCDD	6.71E-10	2.84E-10	2.10E-10
Total PeCDD	1.52E-09	6.22E-10	1.05E-09
Total HxCDD	2.08E-09	7.56E-10	1.13E-09
Total HpCDD	2.24E-09	5.91E-10	1.54E-09
OCDD	2.48E-09	8.67E-10	1.62E-09
Total PCDD	8.98E-09	3.12E-09	5.54E-09

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA HOT GAS TEST PROGRAM SUMMARY OF DIOXIN AND FURAN TEST DATA AND TEST RESULTS

TEST DATA			T1		T2		Т3
Test run number				TRRUR!	NER DISCI	HARGE	
Test location			01-31-96		02-02-96		02-04-96
Test date					1405-2038		410-2045
Test time period			1834-0121	1	1405-2030		1410-2043
FURAN LABORATORY REPORT DATA, ng							
2,3,7,8-TCDF		ND<	0.007		0.010		0.010
1,23,7,8-PeCDF		ND<	0.020		0.010		0.020
2,3,4,7,8-PeCDF		ND<	0.020		0.030		0.020
1,2,3,4,7,8-HxCDF			0.020		0.040		0.060
1,2,3,6,7,8-HxCDF			0.010		0.020		0.030
2,3,4,6,7,8-HxCDF			0.020		0.030		0.030
1,2,3,7,8,9-HxCDF		ND<	0.010	ND<	0.020	ND<	0.010
1,23,4,67,8-HbCDF			0.050		0.080		0.100
1,23,4,7,8,9-HpCDF			0.010		0.010		0.020
•			0.040		0.140		0.350
Total TCDF			0.130		0.280		0.320
Total PeCDF							0.280
Total HxCDF			0.160		0.200		0.280
Total HpCDF			0.130		0.160		
OCDF			0.080		0.050		0.050
Total PCDF			0.540		0.830		1.180
FURAN CONCENTRATION, ppb/v	mole wt						
2,3,7,8-TCDF	305.9750	ND<	1.08E-07		1.61E-07		1.73E-07
1,2,3,7,8 -P eCDF	340.4201	ND<			1.45E-07		3.11E-07
2,3,4,7,8-PeCDF	340.4201	ND<	2.76E-07		4.34E-07		3.11E-07
1,2,3,4,7,8-HxCDF	374.8652		2.51E-07		5.26E-07		8.46E-07
1,23,6,7,8-HxCDF	374.8652		1.26E-07		2.63E-07		4.23E-07
2,3,4,6,7,8-HxCDF	374.8652		2.51E-07		3.94E-07		4.23E-07
1,23,7,8,9-HxCDF	374.8652	ND<	1.26E-07	ND<	2.63E-07	ND<	1.41E-07
1,23,4,67,8-HpCDF	409.3103		5.75E-07		9.63E-07		1.29E-06
1,23,4,7,8,9-HpCDF	409.3103		1.15E-07		1.20E-07		2.58E-07
1,4,5,4,7,5, 71,p (2)	10,2100						
Total TCDF	305.9750		6.15B-07		2.25B-06		6.05E-06
Total PeCDF	340.4201		1.80E-06		4.05B-06		4.97E-06
Total HxCDF	374.8652		2.01E-06		2.63E-06		3.95E-06
Total HpCDF	409.3103		1.49E-06		1.93E-06		2.32E-06
OCDF	443.7554		8.48E-07		5.55E-07		5.96E-07
Total PCDF	305,9750		8.31E-06		1.34E-05		2.04E-05
FURAN EMISSIONS, Ib/dscf							
2,3,7,8-TCDF		ND<	8.55E-17		1.28E-16		1.37E-16
1,2,3,7,8-PeCDF		ND<	2.44E-16		1.28E-16		2.74E-16
2,3,4,7,8-PeCDF		ND<	2.44E-16		3.83E-16		2.74E-16
1,23,4,7,8-HxCDF			2.44B-16		5.11E-16		8.23E-16
1,2,3,6,7,8-HxCDF			1.22E-16		2.56E-16		4.11E-16
2,3,4,6,7,8-HxCDF			2.44E-16		3.83E-16		4.11E-16
1,2,3,7,8,9-HxCDF		ND<	1.22E-16	ND<	2.56E-16	ND<	1.37E-16
1,23,4,6,7,8 -Hp CDF		*	6.11E-16		1.02E-15		1.37E-15
1,23,4,7,8,9-HpCDF			1.22E-16		1.28E-16		2.74E-16
Total TCDF			4.88E-16		1.79E-15		4.80E-15
Total PeCDF			1.59E-15		3.58E-15		4.39E-15
Total HxCDF			1.95E-15		2.56E-15		3.84E-15
Total HpCDF			1.59E-15		2.05E-15		2.47E-15
OCDF			9.77E-16		6.39E-16		6.86E-16
Total PCDF			6.59E-15		1.06E-14		1.62E-14
TOMELCENT			0.000				

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA HOT GAS TEST PROGRAM

SUMMARY OF DIOXIN AND FURAN TEST DATA AND TEST RESULTS

TEST DATA		ma	Т3
Test run number	T1	T2	
Test location		TERBURNER DISCI	
Test date	01 -31-9 6	02-02-96	02-04-96
Test time period	1834-0121	1405–2038	1410-2045
FURAN CONCENTRATIONS, ng/dscm			
2.3.7.8-TCDF	ND< 1.37E-03	2.05E-03	2.2016-03
1,23,7,8-PeCDF	ND< 3.91E-03	2.05E-03	4.39E-03
2,3,4,7,8-PeCDF	ND< 3.91E-03	6.14E-03	4.39E-03
1,2,3,4,7,8-HxCDF	3.91E-03	8.19E-03	1.32E-02
1.23,6,7,8-HxCDF	1.96E-03	4.09E-03	6.59E-03
2,3,4,6,7,8-HxCDF	3.91E-03	6.14E-03	6.59E-03
1,23,7,8,9-HxCDF	ND< 1.96E-03	ND< 4.09E-03	ND< 2.20E-03
1,2,3,4,6,7,8-HpCDF	9.78E-03	1.64E-02	2.20E-02
1,2,3,4,7,8,9-HpCDF	1.96E-03	2.05E-03	4.39E-03
Total TCDF	7.82E-03	2.87E-02	7.69E-02
-	2.54E-02	5.73E-02	7.03E-02
Total PeCDF	3.13E-02	4.095-02	6.15E-02
Total HxCDF	2.54E-02	3.28E-02	3.95E-02
Total HpCDF	1.56E-02	1.02E-02	1.10E-02
OCDF	1.06E-01	1.70E-01	2.59E-01
Total PCDF	1.000-01	1.745-01	2.532 01
FURAN EMISSIONS, Ib/hr			
2.3.7,8-TCDF	ND< 5.59E-12	7.88E-12	8.08E-12
1,2,3,7,8-PeCDF	ND< 1.60E-11	7.88E-12	1.62E-11
2,3,4,7,8-PeCDF	ND< 1.60E-11	2.36B-11	1.62E-11
1,2,3,4,7,8-HxCDF	1.60E-11	3.15E-11	4.85E-11
1,2,3,6,7,8-HxCDF	7.99E-12	1.58E-11	2.42E-11
2,3,4,6,7,8 -H xCDF	1.60E-11	2.36E-11	2.42E-11
1,23,7,8,9-HxCDF	ND< 7.99E-12	ND< 1.58E-11	ND< 8.08E-12
1,2,3,4,6,7,8 -Hp CDF	3.99E-11	6.30E-11	8.08E-11 1.62E-11
1,2,3,4,7,8,9 -Hp CDF	7.99E-12	7.88E-12	1,025-11
Total TCDF	3.20E-11	1.10E-10	2.83E-10
Total PeCDF	1.04E-10	2.21E-10	2.59E-10
Total HxCDF	1.28E-10	1.58E-10	2.26E-10
Total HpCDF	1.04E-10	1.26E-10	1.45E-10
OCDF	6.39E-11	3.94E-11	4.04E-11
Total PCDF	4.31E-10	6.54E-10	9.53E-10

TOXICTLY EQUIVALENCY FACTORS (I-TEF\$/89)

2,3,7,8-TCDD	1	1	1
1,2,3,7,8-PeCDD	0.5	0.5	0.5
1,2,3,4,7,8-HxCDD	0.1	0.1	0.1
1,2,3,6,7,8-HxCDD	0.1	0.1	0.1
1,2,3,7,8,9-HxCDD	0.1	0.1	0.1
1,2,3,4,6,7,8-HpCDD	0.01	0.01	0.01
-			
Total TCDD	0	0	0
Total PeCDD	0	0	0
Total HxCDD	0	0	0
Total HpCDD	0	0	0
OCDD	0.001	0.001	0.001
2.2.2.8 TODE	0.1	0.1	0.1
2,3,7,8-TCDF	0.05	0.05	0.05
1,2,3,7,8-PeCDF	0.5	0.5	0.5
2,3,4,7,8-PeCDF		0.1	0.1
1,2,3,4,7,8-HxCDF	0.1 0.1	0.1	0.1
1,2,3,6,7,8-HxCDF			
2,3,4,6,7,8 -Hx CDF	0.1	0.1	0.1 0.1
1,2,3,7,8,9-HxCDF	0.1	0.1	
1,2,3,4,6,7,8 -Hp CDF	0.01	0.01	0.01
1,23,4,7,8,9 -Гф СDF	0.01	0.01	0.01
Total TCDF	0	0	0
Total PeCDF	0	0	0
Total HxCDF	0	0	0
Total HpCDF	0	0	0
OCDF	0.001	0.001	0.001

TEST DATA:									
Test run number		1		1		1 .		1	
Test location		OUTLET		OUTLET		OUTLET		OUTLET	
Test date		01–31–96		01–31–96		01–31–96		01-31-96	
Test time		1846-1926		2052-2132		2153-2233		2242-2322	
Test tube pair		1		3		4		5	
rest tabe pair		-		•		-		_	
SAMPLING DATA:									
Duration, minutes		40.00		40.00		40.00		40.00	
Average dry gas meter press. in. H	[₂ O	1.39		1.40		1.40		1.30	
Average dry gas meter temp. deg.	Ċ	9.81		11.12		11.00		11.00	
Average dry gas meter temp. deg.	F	49.66		52.02		51.80		51.80	
Average absolute meter temp. deg	. R	509.66		512.02		511.80		511.80	
Actual sample volume, liters		21.440		22.693		21.385		20.763	
Meter box calibration, Y		1.0060		1.0060		1.0060		1.0060	
Barometric pressure, in. Hg		29.73		29.73		29.73		29.73	
Sample volume, dscf		0.7865		0.8287		0.7812		0.7583	
Volumetric flow rate, dscf/min (1)		1000		1000		1000		1000	
LABORATORY DATA, ng:	M.W.								
Chloromethane (Methyl Chloride)	50.49	1000.000		2200.000	E	5500,000	Е	3900.000	Е
Bromomethane (Methyl Bromide)		81.000	Љ	530.000	L	120.000		400.000	1.0
Vinyl Chloride	62.50	100.000		100.000	TI	100.000	IJ	100.000	U
Chloroethane (Ethyl Chloride)	64.52	100.000	-	100.000	-	100.000		100.000	
Methylene chloride	84.93	99.463	JВ	86.257	JB.	68.239	JВ	57.264	JВ
Acetone	58.09	24667.707	E	1682.057	o _D	2265.912	V.D	2568.114	0.25
Carbon Disulfide	76.13	50.000	-	50.000	IJ	50.000	IJ	50.000	U
1.1-Dichloroethene	96.94	50.000		50.000		50.000		50.000	
1,1—Dichloroethane	98.96	50.000	-	50.000		50.000		50.000	
1,2-Dichloroethene (trans)	96.94	50.000		50.000		50.000		50.000	
Chloroform	119.37	20.078	J	21.154	J	19.943	J	19.359	J
1,2-Dichloroethane (EDC)	98.96	50.000	-	50.000	U	50.000	Ū	50.000	Ū
2-Butanone (MEK)	72.12	1000.000		1000.000		1000.000		1000.000	
1,1,1-Trichloroethane (TCA)	133.40	50.000		50.000		50.000		50.000	
Carbon Tetrachloride	153.81	50.000	_	50.000		50.000	Ū	50.000	
Vinyl acetate	86.09	200.000		200.000		200.000		200.000	
Bromodichloromethane	163.83	50.000		50.000	_	50.000		50.000	
1,2-Dichloropropane	112.99	50.000		50.000		50.000		50.000	
cis-1,3-Dichloropropene	110.98	50.000		50.000		50,000	Ū	50.000	U
Trichloroethene (TCE)	131.38	50.000		50.000		50.000	U	50.000	U
Dibromochloromethane	208.29	50.000	U	50.000	U	50.000	U	50.000	U
1,1,2-Trichloroethane	133.40	50.000	U	50.000	U	50.000	U	50.000	U
Benzene	78.12	99.000	JВ	46.000	Љ	68.000	JB	67.000	JВ
trans-1,3-Dichloropropene	110.98	50.000	U	50.000	U	50.000	U	50.000	U
Bromoform	252.75	50.000	U	50.000	U	50.000	U	50.000	U
4-Methyl-2-Pentanone (MIBK)	100.18	1000.000	U	1000.000	U	1000.000	U	1000.000	U
2-Hexanone	100.18	1000.000	U	1000.000	U	1000.000	U	1000.000	U
Tetrachloroethene (PCE)	165.82	50.000	U	50.000	U	50.000	U	50.000	U
1,1,2,2-Tetrachloroethane	167.84	50.000	U	50.000	U	50.000	U	50.000	U
Toluene	92.15	50.000	Љ	32.000	JВ	44.000	JB	35.000	JB
Chlorobenzene	112.56	50.000	U	50.000	U	50.000	U	50.000	U
Ethylbenzene	106.18	50.000	U	50.000	U	50.000	U	50.000	U
Styrene	104.16	17.000	J	6.000	J	12.000	J	9.000	J
Xylenes (total)	106.18	38.000		13.000	J	28.000		29.000	J
2-Chloroethyl vinyl ether	106.55	200.000	U	200.000	U	200.000	U	200.000	U

U = detection limit value.

J = Estimated value below the detection limit.

E= Estimated value above the detection limit.

 $B = Compound \ also \ detected \ in \ blank. \ Reported \ values \ are \ not \ blank \ corrected.$

⁽¹⁾ Volumetric flow rate based on average of Particulate/HCl and MMTL tests flow measurements.

NOTE: Data from test tube pairs 2 and 6 not available due to instrument failure during analysis.

TEST DATA:					4		1		1
Test run number	1		1		1		OUTLET		OUTLET
Test location	OUTLET		OUILET		OUTLET		01 -31-9 6		COLLET
Test date	01 -3 1-96		01-31-96		01-31-96		2242-2322		
Test time	1846-1920		2052-2132		2153-2233		224 <i>2</i> –2322 5		VERAGE (2)
Test tube pair	1		3		4		3	P	VERAGE
TO THE PROPERTY OF THE P.									
VOST EMISSIONS (Ibs/dscf):	2.80E-0	1	5.85E-09 E		1.55E-08 E		1.13E-08 E		8.88E-09
Chloromethane (Methyl Chloride)	2.27E-1		1.41E-09		3,39E-10		1.16E-09		7.85E-10
Bromomethane (Methyl Bromide)			7 1 2 2 2 2	<	2.82E-10	<	2.91E-10	<	2.80E-10
Vinyl Chloride	< 2.80E-10			<	2.82E-10	~	2.91E-10	<	2.80E-10
Chloroethane (Ethyl Chloride)	2.79E-1		2.29E-10 JB	_	1.93E-10 JB	-	1.66E-10 JB		2.17E-10
Methylene chloride	6.91E-0		4.48E-09		6.39E-09		7.47E-09		2.19E-08
Acetone				<	1.41E-10	<	1.45E-10	<	1.40E-10
Carbon Disulfide	< 1.40E-1			<	1.41E-10	<	1.45E-10	<	1.40E-10
1,1-Dichloroethene	< 1.40E-1			<	1.41E-10	<	1.45E-10	<	1.40E-10
1,1-Dichloroethane	< 1.40E-1			~	1.41E-10	~	1.45E-10	<	1.40E-10
1,2-Dichloroethene (trans)	< 1.40E-1		5.63E-11 J		5.63E-11 J	_	5.63E-11 J	•	5.63E-11
Chloroform	5.63E-1			_	1.41E-10	<	1.45E-10	<	1.40E-10
1,2-Dichloroethane (EDC)	< 1.40E-1			< <	2.82E-09	~	2.91E-09	<	2.80E-09
2-Butanone (MEK)	< 2.80E-0			<	1.41E-10	~	1.45E-10	<	1.40E-10
1,1,1-Trichloroethane (TCA)	< 1.40E-1			<	1.41E-10 1.41E-10	<	1.45E-10	<	1.40E-10
Carbon Tetrachloride	< 1.40E-1			<	5.64E-10	<	5.81E-10	<	5.60E-10
Vinyl acetate	< 5.61E-1		-		1.41E-10	<	1.45E-10	<	1.40E-10
Bromodichloromethane	< 1.40E-1			~	1.41E-10	<	1.45E-10	<	1.40E-10
1,2-Dichloropropane	< 1.40E-1			~	1.41E-10	~	1.45E-10	<	1.40E-10
cis-1,3-Dichloropropene	< 1.40E-1 < 1.40E-1			~	1.41E-10	<	1.45E-10	<	1.40E-10
Trichloroethene (TCE)				<	1.41E-10	~	1.45E-10	<	1.40E-10
Dibromochloromethane	< 1.40E-1			~	1.41E-10	~	1.45E-10	<	1.40E-10
1,1,2-Trichloroethane	< 1.40E-1		1.22E-10 JB	_	1.92E-10 JB	_	1.95E-10 JB	`	1.97E-10
Benzene	2.78E-1			<	1.41E-10	<	1.45E-10	<	1.40E-10
trans-1,3-Dichloropropene	< 1.40E-1			~	1.41E-10	<	1.45E-10	<	1.40E-10
Bromoform	< 1.40E-1			~	2.82E-09	<	2.91E-09	<	2.80E-09
4-Methyl-2-Pentanone (MIBK)	< 2.80E-0		T	~	2.82E-09	<	2.91E-09	<	2.80E-09
2-Hexanone	< 2.80E-0			~	1.41E-10	<	1.45E-10	<	1.40E-10
Tetrachloroethene (PCE)	< 1.40E-1			~	1.41E-10	~	1.45E-10	<	1.40E-10
1,1,2,2-Tetrachloroethane	< 1.40E-1			•	1.4E-10 JB	_	1.02E-10 JB		1.13E-10
Toluene	1.40E-1		8.51E-11 JB	_		<	1.45E-10	<	1.40E-10
Chlorobenzene	< 1.40E-1			<	1.41E-10	<	1.45E-10	<	1.40E-10 1.40E-10
Ethylbenzene	< 1.40E-1			<	1.41E-10	<	1.45E-10 2.62E-11 J	`	3.09E-11
Styrene	4.77E-1		1.60E-11 J		3.39E-11 J		8.43E-11 J		7.61E-11
Xylenes (total)	1.07E-1		3.46E-11 J	_	7.90E-11		5.81E-10	<	5.60E-10
2-Chloroethyl vinyl ether	< 5.61E-1	0 <	5.32E-10	<	5.64E-10	<	3.010-10	`	3.001-10

 $[\]label{eq:B} B = Compound also detected in blank. Reported values are not blank corrected. \\ J = Estimated value below the detection limit.$

E=Estimated value above the detection limit.

⁽²⁾ Detection limit values included in overall average.

TEST DATA:										
Test run number		1		1		1		1		1
Test location		OUTLET		OUTLET		OUTLET		OUTLET		OUTLET
Test date		01-31-96		01 -3 1-96		01 -3 1-96		01-31 -9 6		
Test time		1846-1926		2052-2132		2153-2233		2242-2322		(2)
Test tube pair		1		3		4		5	A'	VERAGE (2)
•										
VOST EMISSIONS (ug/dscm):										
Chloromethane (Methyl Chloride)		4.49E+01		9.37E+01 E		2.49E+02 E		1.82E+02 E		1.42E+02
Bromomethane (Methyl Bromide)		3.64E+00 JB		2.26E+01		5.42E+00		1.86E+01		1.26E+01
Vinyl Chloride	<	4.49E+00	<	4.26E+00	<	4.52E+00	<	4.66E+00	<	4.48E+00
Chloroethane (Ethyl Chloride)	<	4.49E+00	<	4.26E+00	<	4.52E+00	<	4.66E+00	<	4.48E+00
Methylene chloride		4.47E+00 JB		3.68E+00 JB		3.08E+00 JB		2.67E+00 JB		3.47E+00
Acetone		1.11E+03 E		7.17E+01		1.02E+02		1.20E+02		3.50E+02
Carbon Disulfide	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
1,1-Dichloroethene	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
1.1-Dichloroethane	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
1,2-Dichloroethene (trans)	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
Chloroform		9.01E - 01 J		9.01E-01 J		9.01E-01 J		9.01 E- 01 J		9.01E - 01
1,2-Dichloroethane (EDC)	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
2-Butanone (MEK)	<	4.49E+01	<	4.26E+01	<	4.52E+01	<	4.66E+01	<	4.48E+01
1,1,1-Trichloroethane (TCA)	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
Carbon Tetrachloride	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
Vinyl acetate	<	8.98E+00	<	8.52E+00	<	9.04E+00	<	9.31E+00	<	8.96E+00
Bromodichloromethane	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
1,2-Dichloropropane	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
cis-1,3-Dichloropropene	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
Trichloroethene (TCE)	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
Dibromochloromethane	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
1,1,2-Trichloroethane	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
Benzene		4.44E+00 JB		1.96E+00 JB		3.07E+00 JB		3.12E+00 JB		3.15E+00
trans-1,3-Dichloropropene	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
Bromoform	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
4-Methyl-2-Pentanone (MIBK)	<	4.49E+01	<	4.26E+01	<	4.52E+01	<	4.66E+01	<	4.48E+01
2-Hexanone	<	4.49E+01	<	4.26E+01	<	4.52E+01	<	4.66E+01	<	4.48E+01
Tetrachloroethene (PCE)	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
1,1,2,2-Tetrachloroethane	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
Toluene		2.24E+00 JB		1.36E+00 JB		1.99E+00 JB		1.63E+00 JB		1.81E+00
Chlorobenzene	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
Ethylbenzene	<	2.24E+00	<	2.13E+00	<	2.26E+00	<	2.33E+00	<	2.24E+00
Styrene		7.63E-01 J		2.56E-01 J		5.42E-01 J		4.19E-01 J		4.95E-01
Xylenes (total)		1.71E+00		5.54E-01 J		1.27E+00		1.35E+00 J		1.22E+00
2-Chloroethyl vinyl ether	<	8.98E+00	<	8.52E+00	<	9.04E+00	<	9.31E+00	<	8.96E+00
• •										

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E=Estimated value above the detection limit.

⁽²⁾ Detection limit values included in overall average.

TEST DATA:										
Test run number		1		1		1		1		1
Test location		OUTLET		OUTLET		OUILET		OUTLET	•	OUTLET
Test date		01-31-96		01 - 31 -9 6		01 -3 1-96		01-31-96		
Test time		1846-1926		2052-2132		2153-2233		2242-2322		(2)
Test tube pair		1		3		4		5	A	VERAGE (2)
•										
VOST EMISSIONS (ppm/v):										
Chloromethane (Methyl Chloride)		2.14E-02		4.47E-02 E		1.18E-01 E		8.65E-02 E		6.78E-02
Bromomethane (Methyl Bromide)		9.21E-04 JB		5.72E-03		1.37E-03		4.72E-03		3.18E-03
Vinyl Chloride	<	1.73E-03	<	1.64E-03	<	1.74E-03	<	1.79E-03	<	1.73E-03
Chloroethane (Ethyl Chloride)	· <	1.67E-03	<	1.59E-03	<	1.69E-03	<	1.74E-03	<	1.67E-03
Methylene chloride	•	1.27E-03 JB		1.04E-03 JB		8.74E-04 JB		7.55E-04 JB		9.84E-04
Acetone		4.59E-01 E		2.97E-02		4.24E-02		4.95E-02		1.45E-01
Carbon Disulfide	<	7.09E-04	<	6.73E-04	<	7.14E-04	<	7.36E-04	<	7.08E-04
1,1-Dichloroethene	<	5.57E-04	<	5,29E-04	<	5.61E-04	<	5.78E-04	<	5.56E-04
1.1-Dichloroethane	<	5.46E-04	<	5.18E-04	<	5.49E-04	<	5.66E-04	<	5.45E-04
1,2-Dichloroethene (trans)	<	5.57E-04	<	5.29E-04	<	5.61E-04	<	5.78E-04	<	5.56E-04
Chloroform		1.82E-04 J		1.82E-04 J		1.82E-04 J		1.82E-04 J		1.82E-04
1,2-Dichloroethane (EDC)	<	5.46E-04	<	5.18E-04	<	5.49E-04	<	5.66E-04	<	5.45E-04
2-Butanone (MEK)	<	1.50E-02	<	1.42E-02	<	1.51E-02	<	1.55E-02	<	1.50E-02
1,1,1-Trichloroethane (TCA)	<	4.05E-04	<	3.84E-04	<	4.08E-04	<	4.20E-04	<	4.04E-04
Carbon Tetrachloride	<	3.51E-04	<	3.33E-04	<	3.54E-04	<	3.64E-04	<	3.51E-04
Vinyl acetate	<	2.51E-03	<	2.38E-03	<	2.53E-03	<	2.60E-03	<	2.51E-03
Bromodichloromethane	<	3.30E-04	<	3.13E-04	<	3.32E-04	<	3.42E-04	<	3.29E-04
1,2-Dichloropropane	<	4.78E-04	<	4.54E-04	<	4.81E-04	<	4.96E-04	<	4.77E-04
cis-1,3-Dichloropropene	<	4.87E-04	<	4.62E-04	<	4.90E-04	<	5.05E-04	<	4.86E-04
Trichloroethene (TCE)	<	4.11E-04	<	3.90E-04	<	4.14E-04	<	4.26E-04	<	4.10E-04
Dibromochloromethane	<	2.59E-04	<	2.46E-04	<	2.61E-04	<	2.69E-04	<u> </u>	2.59E-04
1.1.2-Trichloroethane	<	4.05E-04	<	3.84E-04	<	4.08E-04	<	4.20E-04	<	4.04E-04
Benzene		1.37E-03 JB		6.04E-04 JB		9.47E-04 JB		9.61E-04 JB		9.70E-04
trans-1,3-Dichloropropene	<	4.87E-04	<	4.62E-04	<	4.90E-04	<	5.05E-04	<	4.86E-04
Bromoform	<	2.14E-04	<	2.03E-04	<	2.15E-04	<	2.22E-04	<	2.13E-04
4-Methyl-2-Pentanone (MIBK)	<	1.08E-02	<	1.02E-02	<	1.09E-02	<	1.12E-02	<	1.08E-02
2-Hexanone	<	1.08E-02	<	1.02E-02	<	1.09E-02	<	1.12E-02	<	1.08E-02
Tetrachloroethene (PCE)	<	3.26E-04	<	3.09E-04	<	3.28E-04	<	3.38E-04	<	3.25E-04
1,1,2,2-Tetrachloroethane	<	3.22E-04	<	3.05E-04	<	3.24E-04	<	3.34E-04	<	3.21E-04
Toluene		5.86E-04 JB		3.56E-04 JB		5.19E-04 JB		4.26E-04 JB		4.72E-04
Chlorobenzene	<	4.80E-04	<	4.55E-04	<	4.83E-04	<	4.98E-04	<	4.79E-04
Ethylbenzene	<	5.09E-04	<	4.83E-04	<	5.12E-04	<	5.28E-04	<	5.08E-04
Styrene		1.76E-04 J		5.91E-05 J		1.25E-04 J		9.68E-05 J		1.14E-04
Xylenes (total)		3.87E-04		1.26E-04 J		2.87E-04		3.06E-04 J		2.76E-04
2-Chloroethyl vinyl ether	<	2.03E-03	<	1.92E-03	<	2.04E-03	<	2.10E-03	<	2.02E-03

 $[\]rm B = Compound$ also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E=Estimated value above the detection limit.

(2) Detection limit values included in overall average.

TEST DATA:										
Test run number		1		1		1		1		1
Test location		OUTLET		OUTLET		OUTLET		OUTLET		OUTLET
Test date		01-31-96		01-31-96		01-31-96		01 - 31 -9 6		
Test time		1846-1926		2052-2132		2153-2233		2242-2322		(2)
Test tube pair		1		3		4		5	A'	VERAGE (2)
•										
VOST EMISSIONS (lb/hr):										# 00F 04
Chloromethane (Methyl Chloride)		1.68E-04		3.51E-04 E		9.31E-04 E		6.80E-04 E		5.33E-04
Bromomethane (Methyl Bromide)		1.36E-05 JB		8.46E-05		2.03E-05		6.98E-05		4.71E-05
Vinyl Chloride	<	1.68E-05	<	1.60E-05	<	1.69E-05	<	1.74E-05	<	1.68 E- 05
Chloroethane (Ethyl Chloride)	<	1.68E-05	<	1.60E-05	<	1.69E-05	<	1.74E-05	<	1.68E-05
Methylene chloride		1.67E-05 JB		1.38E-05 JB		1.16E-05 JB		9.99E-06 JB		1.30E-05
Acetone		4.15E-03 E	-	2.69E-04		3.84E-04		4.48E-04		1.31E-03
Carbon Disulfide	<	8.41E-06	<	7.98E-06	<	8.47E-06	<	8.72E-06	<	8.39E-06
1,1-Dichloroethene	<	8.41E-06	<	7.98E-06	<	8.47E-06	<	8.72E-06	<	8.39E-06
1,1-Dichloroethane	<	8.41E-06	<	7.98E-06	<	8.47E-06	<	8.72E-06	<	8.39E-06
1,2-Dichloroethene (trans)	<	8.41E-06	<	7.98 E-0 6	<	8.47E-06	<	8.72E-06	<	8.39E-06
Chloroform		3.38 E-0 6 J		3.38E-06 J		3.38E-06 J		3.38E-06 J		3.38E-06
1,2-Dichloroethane (EDC)	<	8.41E-06	<	7.98E-06	<	8.47E-06	<	8.72E-06	<	8.39E-06
2-Butanone (MEK)	<	1.68E-04	<	1.60E-04	<	1.69E-04	<	1.74E-04	<	1.68E-04
1,1,1-Trichloroethane (TCA)	<	8.41E-06	<	7.98E-06	<	8.47E-06	<	8.72E-06	<	8.39E-06
Carbon Tetrachloride	<	8.41E-06	<	7.98 E- 06	<	8.47E-06	<	8.72E-06	<	8.39E-06
Vinyl acetate	<	3.36E-05	<	3.19E-05	<	3.39E-05	<	3.49E-05	<	3.36E-05
Bromodichloromethane	<	8.41E-06	<	7.98E-06	<	8.47E-06	<	8.72E-06	<	8.39E-06
1,2-Dichloropropane	<	8.41E-06	<	7.98E-06	<	8.47E-06	<	8.72E-06	<	8.39E-06
cis-1,3-Dichloropropene	<	8.41E-06	<	7.98E-06	<	8.47E-06	<	8.72E-06	<	8.39E-06
Trichloroethene (TCE)	<	8.41E-06	<	7.98E-06	<	8.47E-06	<	8.72E-06	<	8.39E-06
Dibromochloromethane	<	8.41E-06	<	7.98E-06	<	8.47E-06	<	8.72E-06	<	8.39E-06
1,1,2-Trichloroethane	<	8.41E-06	<	7.98E-06	<	8.47E-06	<	8.72E-06	<	8.39E-06
Benzene		1.67E-05 JB		7.34E-06 JB		1.15E-05 JB		1.17E - 05 JB		1.18E-05
trans-1,3-Dichloropropene	<	8.41E-06	<	7.98E-06	<	8.47E-06	<	8.72E-06	<	8.39E-06
Bromoform	<	8.41E-06	<	7.98E-06	<	8.47E-06	<	8.72E-06	<	8.39E-06
4-Methyl-2-Pentanone (MIBK)	<	1.68E-04	<	1.60E-04	<	1.69E-04	<	1.74E-04	<	1.68E-04
2-Hexanone	<	1.68E-04	<	1.60E-04	<	1.69E-04	<	1.74E-04	<	1.68E-04
Tetrachloroethene (PCE)	<	8.41E-06	<	7.98E-06	<	8.47E-06	<	8.72E-06	<	8.39E-06
1,1,2,2-Tetrachloroethane	<	8.41E-06	<	7.98E-06	<	8.47E-06	<	8.72E-06	<	8.39E-06
Toluene		8.41E-06 JB		5.11E-06 JB		7.45E-06 JB		6.11E - 06 JB		6.77E-06
Chlorobenzene	<	8.41E-06	<	7.98E-06	<	8.47E-06	<	8.72E-06	<	8.39E-06
Ethylbenzene	<	8.41E-06	<	7.98E-06	<	8.47E-06	<	8.72E-06	<	8.39E-06
Styrene		2.86E-06 J		9.58E-07 J		2.03E-06 J		1.57E-06 J		1.85E-06
Xylenes (total)		6.39E-06		2.08E-06 J		4.74E-06		5.06E-06 J		4.57E-06
2-Chloroethyl vinyl ether	<	3.36E-05	<	3.19E-05	<	3.39E-05	<	3.49E-05	<	3.36E-05

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E=Estimated value above the detection limit.

(2) Detection limit values included in overall average.

TEST DATA:										
Test run number		1		1		1		1		1
Test location		OUTLET		OUILET		OUTLET		OUTLET		OUTLET
Test date		01 -31-9 6		01 -31-9 6		01 -31-9 6		01-31-96		
Test time		1846-1926		2052-2132		2153-2233		2242-2322		TED 4 OF (2)
Test tube pair		1		3		4		5	A	VERAGE (2)
VOST EMISSIONS (g/sec):						4.450.04.0		0.55E 05.E		6.71E-05
Chloromethane (Methyl Chloride)		2.12E-05		4.42E-05 E		1.17E-04 E		8.57E-05 E 8.79E-06		5.93E-06
Bromomethane (Methyl Bromide)		1.72E-06 JB		1.07E-05		2.56E-06			_	
Vinyl Chloride	<	2.12E-06	<	2.01E-06	<	2.13E-06	<	2.20E-06	< <	2.12E-06
Chloroethane (Ethyl Chloride)	<	2.12E-06	<	2.01E-06	<	2.13E-06	<	2.20E-06	<	2.12E-06
Methylene chloride		2.11E-06 JB		1.73E-06 JB		1.46E-06 JB		1.26E-06 JB 5.64E-05		1.64E-06 1.65E-04
Acetone		5.23E-04 E		3.38E-05		4.83E-05			_	
Carbon Disulfide	<	1.06E-06	<	1.01E-06	<	1.07E-06	<	1.10E-06	<	1.06E-06
1,1-Dichloroethene	<	1.06E-06	<	1.01E-06	<	1.07E-06	<	1.10E-06	<	1.06E-06
1,1-Dichloroethane	<	1.06E-06	<	1.01E-06	<	1.07E-06	<	1.10E-06	<	1.06E-06
1,2-Dichloroethene (trans)	<	1.06E-06	<	1.01E-06	<	1.07E-06	<	1.10E-06	<	1.06E-06
Chloroform		4.25E-07 J		4.25E-07 J		4.25E-07 J		4.25E-07 J		4.25E-07
1,2-Dichloroethane (EDC)	<	1.06E-06	<	1.01E-06	<	1.07E-06	<	1.10E-06	<	1.06E-06
2-Butanone (MEK)	<	2.12E-05	<	2.01E-05	<	2.13E-05	<	2.20E-05	<	2.12E-05
1,1,1-Trichloroethane (TCA)	<	1.06E-06	<	1.01E-06	<	1.07E-06	<	1.10E-06	<	1.06E-06
Carbon Tetrachloride	<	1.06E-06	<	1.01E-06	<	1.07E-06	<	1.10E-06	<	1.06E-06
Vinyl acetate	<	4.24E-06	<	4.02E-06	<	4.27E-06	<	4.40E-06	<	4.23E-06
Bromodichloromethane	<	1.06E-06	<	1.01E-06	<	1.07E-06	<	1.10E-06	<	1.06E-06
1,2-Dichloropropane	<	1.06E-06	<	1.01E-06	<	1.07E-06	<	1.10E-06	<	1.06E-06
cis-1,3-Dichloropropene	<	1.06E-06	<	1.01E-06	<	1.07E-06	<	1.10E-06	<	1.06E-06
Trichloroethene (TCE)	<	1.06E-06	<	1.01E-06	<	1.07E-06	<	1.10E-06	<	1.06E-06
Dibromochloromethane	<	1.06E-06	<	1.01E-06	<	1.07E-06	<	1.10E-06	<	1.06E-06
1,1,2-Trichloroethane	<	1.06E-06	<	1.01E-06	<	1.07E-06	<	1.10E-06	<	1.06E-06
Benzene		2.10E-06 JB		9.25E-07 JB		1.45E-06 JB		1.47E-06 JB	_	1.49E-06
trans-1,3-Dichloropropene	<	1.06E-06	<	1.01E-06	<	1.07E-06	<	1.10E-06	<	1.06E-06
Bromoform	<	1.06E-06	<	1.01 E- 06	<	1.07E-06	<	1.10E-06	<	1.06E-06
4-Methyl-2-Pentanone (MIBK)	<	2.12E-05	<	2.01E-05	<	2.13E-05	<	2.20E-05	<	2.12E-05
2-Hexanone	<	2.12E-05	<	2.01E-05	<	2.13E-05	<	2.20E-05	<	2.12E-05
Tetrachloroethene (PCE)	<	1.06E-06	<	1.01E-06	<	1.07E-06	<	1.10E-06	<	1.06E-06
1,1,2,2-Tetrachloroethane	<	1.06E-06	<	1.01E-06	<	1.07E-06	<	1.10E-06	<	1.06E-06
Toluene		1.06E-06 JB		6.44E-07 JB		9.39E-07 JB		7.69E-07 JB		8.53E-07
Chlorobenzene	<	1.06E-06	<	1.01E-06	<	1.07E-06	<	1.10E-06	< <	1.06E-06
Ethylbenzene	<	1.06E-06	<	1.01E-06	<	1.07E-06	<	1.10E-06	<	1.06 E- 06 2.34 E- 07
Styrene		3.60E-07 J		1.21E-07 J		2.56E-07 J		1.98E-07 J		2.34E-07 5.75E-07
Xylenes (total)		8.05E-07		2.61E-07 J	_	5.97E-07	_	6.37E-07 J		
2-Chloroethyl vinyl ether	<	4.24 E-0 6	<	4.02E-06	<	4.27E-06	<	4.40E-06	<	4.23E-06

 $[\]label{eq:B} B = Compound \ also \ detected \ in \ blank. \ Reported \ values \ are \ not \ blank \ corrected.$ $J = Estimated \ value \ below \ the \ detection \ limit.$

E=Estimated value above the detection limit.

⁽²⁾ Detection limit values included in overall average.

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, AL

SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS AFTERBURNER DISCHARGE STACK

Test Junchiene	TEST DATA:													
Test location			2		2		2		2		2		2	
Test timbs 14 9-469									OUILET		OUILET		OUILET	
Test time print 1419-1459 1542-1622 1628-1708 1730-1810 1823-1914 1925-2005 Test time print 1									02-02-96		02-02-96		02-02-96	
Test with pair									1730-1810		1825-1914		1925-2005	
SAMPLING DATA:											5		6	
Department minutes	Test tube pair		1		2		ŭ							
Department minutes	SAMPLING DATA:													
Average dry gas meter press. in. H ₂ O			40.00		40.00		40.00		40.00					
Average dry gas meset remp, de p. F		Ω	1.40		1.40		1.40		1.40		1.40		1.44	
Average dry gas mater termp, deg. F	2 , 2	-			9.00		9.44		10.00		10.00			
Actual sample volume, liters			45.73		48.20		48.99		50.00		50.00		50.00	
Actual sumple volume, liters Meire fox calibration, Y Barrometric pressure, in. Hg Sample volume, deef comin (1) Post of the man, deef comin (1) Amount (1) Amount (1) Barrometric mean, deef comin (1) But. LABORATORY DATA, ng Chicromethane (Methyl) Chloride Post of the man, deef comin (1) Amount (1) Post of the man, deef comin (1) Amount (1)					508.20		508.99		510.00		510.00			
Metry tox calibration Y 1.00600 1.00600 1.00600 1.00600 1.00600 1.00600 1.00600 1.00					21.491		21.148		21.265		21.755			
Barometric pressure, in. Hg 29.59	•		1.0060		1.0060		1.0060		1.0060		1.0060			
Nample volumer, deef 0.8669 0.7869 0.7732 0.7795 0.793 0			29.59		29.59		29.59		29.59					
Note Part			0.8069		0.7869		0.7732		0.7759		0.7938			
Chloromethane (Methyl Chloride) 50.49 260.000 180.000 2000.000 E 760.000 390.000 360.000 73.000 150.000	Volumetric flow rate, dscf/min (1)				975		975		975		975		975	
Chloromethane (Methyl Chloride) 50.49	Volumento How Table and American													
Section Chicromethane (Methyl Elminde) 94,55 68,000 180,000 180,000 U 100,000 U	LABORATORY DATA, ng:	M.W.									460.000		600,000	1
Promomentation (Membry I Brombia) 94,93 100,000 U	Chloromethane (Methyl Chloride)	50.49				E								
Value Chloroschane (Ehyl Chloride) 64.52 100.000 U 100.000	Bromomethane (Methyl Bromide)	94.95	68.000											Y1
Methylene chloride 84,93 52,597 JB 76,260 JB 94,028 JB 90,074 JB 63,376 JB 75,664 JB 7	Vinyl Chloride	62.50	100.000	U										
Methylene chloride \$4,95 \$35,753 \$9312.164 \$248,453 \$3579.191 \$3314.012 \$3518.628 \$11.1-Dichloroethene \$311,753 \$9312.164 \$248,453 \$3579.191 \$3579.191 \$3314.012 \$3518.628 \$11.1-Dichloroethene \$311,012 \$11.1-Dichloroethene	Chloroethane (Ethyl Chloride)	64.52	100.000	U										
Aceteme 38.09 3317.33 3317.00 U 50.000 U 7.000 J 9.000 J 10.000 J Carbon Disulfide 76.13 8.000 U 50.000 U </td <td>Methylene chloride</td> <td>84.93</td> <td>52.597</td> <td>Љ</td> <td></td> <td>Љ</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>JB</td> <td></td> <td>JB</td>	Methylene chloride	84.93	52.597	Љ		Љ						JB		JB
Carbon Distribute 76.13 St.000 U St.0000 U S	Acetone	58.09	3517.553							-				
IDichloroethane	Carbon Disulfide	76.13	8.000	J										
1,1-Dichlorechane (trans) 96,94 50,000 U 50,000	1,1-Dichloroethene	96.94	50.000	υ		_								
1,2-Dichloroethene (trans) 90.94 50.000 19.890 J 19.890 J 19.542 J 19.612 J 20.064 J 20.496 J	1,1-Dichloroethane	98.96	50.000	U										
Chloroform 119.37 20.398 3 13.898	1,2-Dichloroethene (trans)	96.94	50.000	\mathbf{u}										
1.2-Dichloroethane (EDC)	Chloroform	119.37												
Hardone (MPK) 72.12 100.000 U 50.000	1,2-Dichloroethane (EDC)	98.96												
1,1,1- Trichloroethane 1CA 153.40 50.000 U	2-Butanone (MEK)	72.12												
Carbon Tetrachloride 153.51 30,000 U 200,000 U 50,000	1,1,1-Trichloroethane (TCA)	133.40												
Bromodichloromethane 163.83 50.000 U	Carbon Tetrachloride													
1,2-Dichloropropane 112,99 50,000 U	Vinyl acetate								_					
1,2-Dichloropropene	Bromodichloromethane	163.83	50.000	\mathbf{u}										
Care 1,3-Pichloropropene	1,2-Dichloropropane													
Dibromochloromethane CEE 151.58 50.000 U 50.0	cis-1,3-Dichloropropene													
Distromordentender														
Renzene 78.12 24.000 JB 17.000 JB 10.000 JB 30.000 JB 18.000 JB 20.000 JB 18.000 JB 10.000 JB 10.0000 JB 10.0000 JB 10.0000 JB 10.0000	Dibromochloromethane													
Benzene Tans-1,3-Dichloropropene 110,98 50,000 U 50,000	1,1,2-Trichloroethane					-								
Bromoform 252.75 50.000 U														
## Romoform														
## Amethyl-2-Pentanone (MIBK) 100.18 1000.000 U 100														
Tetrachloroethene (PCE) 165.82 50.000 U	• • • • • • • • • • • • • • • • • • • •													
1,1,2,2-Tetrachloroethane											_			
Toluene 92.15 10.000 J 12.000 J 5.000 U 50.000 U														
Toluene 92.15 10.000 J 12.000 U 50.000														
Chierobenzene 112.56 50.000 U						-						-		
Styrene 104.16 50.000 U 50.000														
Styrene 104.16 50.000 U 50.000 U 8.000 J 50.000 U 50.000 U <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>														
Aylenes (total) 100.16 0.000 3 5.000 3 200.000 11 200.000 11 200.000 11 200.000 11	•									-				
2-Chloroethyl vinyl ether 106.55 200.000 U 200.000 U 200.000 U 200.000 U 200.000 U 200.000 U										-				
	2-Chloroethyl vinyl ether	106.55	200,000	U	200.000	U	200,000	U	200,000	Ü	200.000	v	200.000	-

U = detection limit value.

J = Estimated value below the detection limit.

E=Estimated value above the detection limit.

B = Compound also detected in blank. Reported values are not blank corrected.

⁽¹⁾ Volumetric flow rate based on average of Particulate/HCl and MMTL tests flow measurements.

TEST DATA: Test run number Test location Test date Test time Test tube pair	2 OUTLET 02-02-96 1419-1459 1	2 OUTLET 02-02-96 1542-1622 2	2 OUTLET 02-02-96 1628-1708 3	2 OUTLET 02-02-96 1730-1810 4	2 OUTLET 02 -02-9 6 1825-1914 5	2 OUNLET 02-02-96 1925-2006 6	2 OUTLET AVERAGE ⁽²⁾
VOST EMISSIONS (lbs/dscf):							
Chloromethane (Methyl Chloride)	7.10E-10	5.60E-09	E 2.17E-09	1.11E-09	1.00E-09	1.88E-09	2.08E-09
Bromomethane (Methyl Bromide)	1.86E-10	5.04E-10	2.65E-10	2.42E-10	2.03E-10	4.08E-10	3.01E-10
Vinyl Chloride	< 2.73E-10	< 2.80E-10	< 2.85E-10	< 2.84E-10	< 2.78E-10	< 2.72E-10	< 2.79E-10
Chloroethane (Ethyl Chloride)	< 2.73E-10	< 2,80E-10	< 2.85E-10	< 2.84E-10	< 2.78E-10	< 2.72E-10	< 2.79E-10
Methylene chloride	1.44E-10 JB	2.14E-10	JB 2.68E-10	JB 2.56E-10 JI		2.06E-10 JB	2.11E-10
Acetone	9.61E-09	2.61E-08	7.55E-09		9.20E-09	9.57E-09	1.20E-08
Carbon Disulfide	2.19E-11 J	< 1.40E-10	< 1.43E-10	1.99E-11 J	2.50€-11 J	2.72E-11 J	≤ 6.28E-11
1.1-Dichloroethene	< 1.37E-10	< 1.40E-10	< 1.43E-10	< 1.42E-10	< 1.39E-10	< 1.36E-10	< 1.39E-10
1.1-Dich loroethane	< 1.37E-10	< 1.40E-10	< 1.43E-10	< 1.42E-10	< 1.39E-10	< 1.36E-10	< 1.39E-10
1.2-Dich loroethene (trans)	< 1.37E-10	< 1.40E-10	< 1.43E-10	< 1.42E-10	< 1.39E-10	< 1.36E-10	< 1.39E-10
Chloroform	5.57E-11 J	5.57E-11	J 5.57E-11	J 5.57E-11 J	5.57E-11 J	5.57E-11 J	5.57E-11
1,2-Dich loroethane (EDC)	< 1.37E-10	< 1.40E-10	< 1.43E-10	< 1.42E-10	< 1.39E-10	< 1.36E-10	< 1.39E-10
2-Butanone (MEK)	< 2.73E-09	< 2.80E-09	< 2.85E-09	< 2.84E-09	< 2.78E-09	< 2.72E-09	< 2.79E-09
1,1,1-Trichloroethane (TCA)	< 1.37E-10	< 1.40E-10	< 1.43E-10	< 1.42E-10	< 1.39E-10	< 1.36E-10	< 1.39E-10
Carbon Tetrachloride	< 1.37E-10	< 1.40E-10	< 1.43E-10	< 1.42E-10	< 1.39E-10	< 1.36E-10	< 1.39E-10
Vinylacetate	< 5.46E-10	< 5.60E-10	< 5.70E-10	< 5.68E-10	< 5.55E-10	< 5.44E-10	< 5.57E-10
Bromodich loromethane	< 1.37E-10	< 1.40E-10	< 1.43E-10	< 1.42E-10	< 1.39E-10	< 1.36E-10	< 1.39E-10
1,2-Dichloropropane	< 1.37E-10	< 1.40E-10	< 1.43E-10	< 1.42E-10	< 1.39E-10	< 1.36E-10	< 1.39E-10
cis-1,3-Dichloropropene	< 1.37E-10	< 1.40E-10	< 1.43E-10	< 1.42E-10	< 1.39E-10	< 1.36E-10	< 1.39E-10
Trichloroethene (TCE)	< 1.37E-10	< 1.40E-10	< 1.43E-10	< 1.42E-10	< 1.39E-10	< 1.36E-10	< 1.39E-10
Dibromoch loromethane	< 1.37E-10	< 1.40E-10	< 1.43E-10	< 1.42E-10	< 1.39E-10	< 1.36E-10	< 1.39E-10
1.1.2-Trich lorcethane	< 1.37E-10	< 1.40E-10	< 1.43E-10	< 1.42E-10	< 1.39E-10	< 1.36E-10	< 1.39E-10
Ben zene	6.56E-11 JE		JB 2.85E-11	JB 8.52E-11 J	B 5.00E-11 JB	5.44E-11 JB	5.52E-11
trans-1.3-Dichloropropene	< 1.37E-10	< 1.40E-10	< 1.43E-10	< 1.42E-10	< 1.39E-10	< 1.36E-10	< 1.39E-10
Bromoform	< 1.37E-10	< 1.40E-10	< 1.43E-10	< 1.42E-10	< 1.39E-10	< 1.36E-10	< 1.39E-10
4-Methyl-2-Pentanone (MIBK)	< 2.73E-09	< 2.80E-09	< 2.85E-09	< 2.84E-09	< 2.78E-09	< 2.72E-09	< 2.79E-09
2-Hexanone	< 2.73E-09	< 2.80E-09	< 2.85E-09	< 2.84E-09	< 2.78E-09	< 2.72E-09	< 2.79E-09
Tetrach loroethene (PCE)	< 1.37E-10	< 1.40E-10	< 1.43E-10	< 1.42E-10	< 1.39E-10	< 1.36E-10	< 1.39E-10
1.1.2.2-Tetrachloroethane	< 1.37E-10	< 1.40E-10	< 1.43E-10	< 1.42E-10	< 1.39E-10	< 1.36E-10	< 1.39E-10
Tohene	2.73E-11 J	3.36E-11	J 1.43E-11			1.90 E- 11 J	2.56E-11
Chlorobenzene	< 1.37E-10	< 1.40E-10	< 1.43E-10	< 1.42E-10	< 1.39E-10	< 1.36E-10	< 1.39E-10
Ethylben zene	< 1.37E-10	< 1.40E-10	< 1.43E-10	< 1.42E-10	< 1.39E-10	< 1.36E-10	< 1.39E-10
Styrene	< 1.37E-10	< 1.40E-10	< 1.43E-10	1.4 2E- 11 J		< 1.36E-10	≤ 1.18E-10
Xylenes (total)	1.64E-11 J	1.40E-11		2.27E-11 J		< 1.36E-10	≤ 7.84E-11
2-Chloroethyl vinyl ether	< 5.46E-10	< 5.60E-10	< 5.70E-10	< 5.68E-10	< 5.55E-10	< 5.44E-10	< 5.57E-10

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E= Estimated value above the detection limit.

(2) Detection limit values included in overall average.

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, AL

SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS AFTERBURNER DISCHARGE STACK

TEST DATA: Test run number		2		2		2 OUILET		2 OUTLET		2 OUTLET		2 OUTLET		2 OUTLET
Test location		OUTLET		OUTLET		02-02-96		02-02-96		02-02-96		02-02-96		
Test date		02-02-96		02-02-96		1628-1708		1730-1810		1825-1914		1925-2006		
Test time		1419-1459		1542-1622				4		5		6	A'	VERAGE (2)
Test tube pair		1		2		3		4		3		v	• • • • • • • • • • • • • • • • • • • •	
•														
VOST EMISSIONS (ug/dscm):						3.47E+01		1.77E+01		1.60E+01		3.00E+01		3.33E+01
Chloromethane (Methyl Chloride)		1.14E+01		8.97E+01 E		4.25E+00		3.87E+00		3.25E+00		6.53E+00		4.82E+00
Bromomethane (Methyl Bromide)		2.98E+00		8.08E+00		4.23E+00 4.57E+00	<	4.55E+00	<	4.45E+00	<	4.35E+00	<	4.46E+00
Vinyl Chloride			<	4.49E+00	<	4.57E+00	- 2	4.55E+00	2	4.45E+00	2	4.35E+00	<	4.46E+00
Chloroethane (Ethyl Chloride)	<	4.38E+00	<	4.49E+00 3.42E+00 JB	<	4.29E+00 JB	_	4.10E+00 JB	_	2.82E+00 JB	-	3.29E+00 JB	-	3.37E+00
Methylene chloride		2.30E+00 JB				1.21E+02 J		1.63E+02 J		1.47E+02		1.53E+02		1.93E+02
Acetone		1.54E+02		4.18E+02 2.24E+00	<			3.19E-01 J		4.00E-01 J		4.35E-01 J	≤	1.01E+00
Carbon Disulfide		3.50E-01 J	<		~	2.28E+00	<	2.28E+00	<	2.22E+00	<	2.18E+00	<	2.23E+00
1,1-Dich loroethene	<	2.19E+00	<	2.24E+00		2.28E+00	~	2.28E+00	~	2.22E+00	<	2.18E+00	<	2.23E+00
1,1-Dichloroethane	<	2.19E+00	<	2.24E+00	<	2.28E+00	~	2.28E+00	~	2.22E+00	~	2.18E+00	<	2.23E+00
1,2-Dich loroethene (trans)	<	2.19E+00	<	2.24E+00	<	8.92E-01 J	`	8.92E-01 J	_	8.92F-01 J	-	8.92E-01 J	-	8.92F-01
Chloroform		8.92E-01 J		8.92E-01 J		2.28E+00	<	2.28E+00	<		<	2.18E+00	<	2.23E+00
1,2-Dichloroethane (EDC)	<	2.19E+00	<	2.24E+00	<	4.57E+01	~	4.55E+01	~	4.45E+01	~	4.35E+01	<	4.46E+01
2—Butanone (MEK)	<	4.38E+01	<	4.49E+01	<	2.28E+00	~	2.28E+00	~	2.22E+00	<	2.18E+00	<	2.23E+00
1,1,1-Trich lorcethane (TCA)	<	2.19E+00	<	2.24E+00	<	2.28E+00	~	2.28E+00	~	2.22E+00	~	2.18E+00	<	2,23E+00
Carbon Tetrachloride	<	2.19E+00	<	2.24E+00	<	9.13E+00	<	9.10E+00	~	8.90E+00	~	8.71E+00	<	8.93E+00
Vinylacetate	<	8.75E+00	<	8.97E+00	<			2.28E+00	~	2.22E+00	~	2.18E+00	<	2.23E+00
Bromodich loromethane	<	2.19E+00	<	2.24E+00	<	2.28E+00	<	2.28E+00	~	2.22E+00	~	2.18E+00	~	2.23E+00
1,2-Dichloropropane	<	2.19E+00	<	2.24E+00	<	2.28E+00	<	2.28E+00 2.28E+00	~	2.22E+00	~	2.18E+00	<	2.23E+00
cis-1,3-Dichloropropene	<	2.19E+00	<	2.24E+00	<	2.28E+00	<	2.28E+00 2.28E+00	~	2.22E+00	~	2.18E+00	~	2.23E+00
Trichloroethene (TCE)	<	2.19E+00	<	2.24E+00	<	2.28E+00	<		-	2.22E+00 2.22E+00	~	2.18E+00	<	2.23E+00
Dibromoch loromethane	<	2.19E+00	<	2.24E+00	<	2.28E+00	<	2.28E+00	<	2.22E+00 2.22E+00	~	2.18E+00 2.18E+00	~	2.23E+00
1,1,2-Trich lorcethane	<	2.19E+00	<	2.24E+00	<	2.28E+00	<	2.28E+00	<		•	8.71E-01 JB	`	8.84E-01
Benzene		1.05E+00 JB		7.63E-01 JB		4.57E-01 JB		1.37E+00 JB		8.01E-01 JB 2.22E+00		2.18E+00	<	2.23E+00
trans-1,3-Dichloropropene	<	2.19E+00	<	2.24E+00	<	2.28E+00	<	2.28E+00	<	2.22E+00 2.22E+00	<	2.18E+00	~	2.23E+00
Bromoform	<	2.19E+00	<	2.24E+00	<	2.28E+00	<	2.28E+00	<		<	4.35E+01	<	4.46E+01
4-Methyl-2-Pentanone (MIBK)	<	4.38E+01	<	4.49E+01	<	4.57E+01	<	4.55E+01	<	4.45E+01	<		<	4.46E+01
2-Hexanone	<	4.38E+01	<	4.49E+01	<	4.57E+01	<	4.55E+01	<	4.45E+01	<	4.35E+01 2.18E+00	<	2.23E+00
Tetrachloroethene (PCE)	<	2.19E+00	<	2.24E+00	<	2.28E+00	<	2.28E+00	<	2.22E+00	<	2.18E+00	<	2.23E+00 2.23E+00
1,1,2,2-Tetrachloroethane	<	2.19E+00	<	2.24E+00	<	2.28E+00	<	2.28E+00	<	2.22E+00	<		•	4.10E-01
Toluene		4.38E-01 J		5.38E-01 J		2.28E-01 J		6.37E-01 J		3.11E-01 J		3.05E-01 J	_	2.23E+00
Chloroben zene	<	2.19E+00	<	2.24E+00	<	2.28E+00	<	2.28E+00	<	2.22E+00	<	2.18E+00 2.18E+00	< <	2.23E+00
Ethylbenzene	<	2.19E+00	<	2.24E+00	<	2.28E+00	<	2.28E+00	<	2.22E+00	<	2.18E+00 2.18E+00		2.23E+00 1.89E+00
Styrene	<	2.19E+00	<	2.24E+00	<	2.28E+00		2.28E-01 J	<	2.22E+00	<	2.18E+00 2.18E+00	≤	1.26E+00
Xylenes (total)		2.63E-01 J		2.24E-01 J	<	2.28E+00		3.64E-01 J	<	2.22E+00	<	2.18E+00 8.71E+00	≤ <	8.93E+00
2-Chloroethyl vinyl ether	<	8.75E+00	<	8.97E+00	<	9.13E+00	<	9.10E+00	<	8.90E+00	<	8. / IETUU	<	6.73ETUU

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E= Estimated value above the detection limit.

(2) Detection limit values included in overall average.

ALABAMA ARMY AMMUNITION PLANT

CHILDERSBURG, AL

SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS AFTERBURNER DISCHARGE STACK

TEST DATA: Test run number Test location Test date Test time		2 OUTLET 02-02-96 1419-1459		2 OUTLET 02-02-96 1542-1622		2 OUTLET 02-02-96 1628-1708		2 OUILET 02-02-96 1730-1810		2 OUTLET 02-02-96 1825-1914		2 OUTLET 02-02-96 1925-2005		OUILET
Test time Test tube pair	•	1		2		3		4		5		6	Α	VERAGE (2)
VOST EMISSIONS (ppm/v):		•		-										
Chloromethane (Methyl Chloride)		5.42E-03		4.28E-02 E		1.65E-02		8.46E-03		7.63E-03		1.43E-02		1.59E-02
Bromomethane (Methyl Bromide)		7.54F-04		2.05E-03		1.08E-03		9.80E-04		8.23E-04		1.66E-03		1.22E-03
Vinyl Chloride	<	1.68E-03	<	1.73E-03	<	1.76E-03	<	1.75E-03	<	1.7IE-03	<	1.68E-03	<	1.72E-03
Chloroethane (Ethyl Chloride)	- 2	1.63E-03	<	1.67E-03	<	1.70E-03	<	1.70E-03	<	1.66E-03	<	1.62E-03	<	1.66E-03
Methylene chloride		6.52E-04 JB	-	9.69E-04 B		1.22E-03 JB		1.16E-03 JB		7.99E-04 JB		9.33E-04 JB		9.55E-04
Acetone		6.38E-02		1.73E-01		5.01E-02 J		6,75E-02 J		6.11E-02		6.35E-02		7.98E-02
Carbon Disulfide		1.11E-04 J	<	7.09E-04	<	7.22E-04		1.01E-04 J		1.27E-04 J		1.38E-04 J	≤	3.18E-04
1.1-Dich loroethene	<	5.43E-04	~	5.57E-04	~	5.67E-04	<	5.65E-04	<	5.52E-04	<	5.40E-04	~	5.54E-04
-,	~	5.32E-04	~	5.45E-04	<	5.55E-04	<	5.53E-04	<	5.41E-04	<	5.29E-04	<	5.43E-04
1,1-Dich loroethane	~	5.43E-04	~	5.57E-04	<	5.67E-04	<	5.65E-04	<	5.52E-04	<	5.40E-04	<	5.54E-04
1,2-Dichloroethene (trans) Chloroform	` .	1.80E-04 J	_	1.80E-04 B		1.80E-04 J		1.80E-04 J		1.80E-04 J		1.80E-04 J		1.80E-04
1.2-Dich loroethane (EDC)	<	5.32E-04	<	5.45E-04	<	5.55E-04	<	5,53E-04	<	5.41E-04	<	5.29E-04	<	5.43E-04
	~	1.46E-02	~	1.50E-02	<	1.52E-02	<	1.52E-02	<	1.48E-02	<	1.45E-02	<	1.49E-02
2-Butanone (MEK)	~	3.95E-04	~	4.05E-04	~	4.12E-04	<	4.10E-04	<	4.01E-04	<	3.93E-04	<	4.03E-04
1,1,1-Trich lorcethane (TCA) Carbon Tetrach loride	~	3.42E-04	~	3.51E-04	<	3.57E-04	<	3.56E-04	<	3.48E-04	<	3.41E-04	<	3.49E-04
	<	2.45E-03	~	2.51E-03	<	2.55E-03	<	2.54E-03	<	2.49E-03	<	2.43E-03	<	2.50E-03
Vinyl acetate Bromodich koromethane	~	3.21E-04	~	3.29E-04	<	3.35E-04	<	3.34E-04	<	3.27E-04	<	3.20E-04	<	3.28E-04
	~	4.66E-04	~	4.78E-04	· <	4.86E-04	<	4.85E-04	<	4.74E-04	<	4.64E-04	<	4.75E-04
1,2-Dich loropropane	<	4.74E-04	~	4.86E-04	~	4.95E-04	<	4.93E-04	<	4.82E-04	<	4.72E-04	<	4.84E-04
cis-1,3-Dichloropropene	~	4.01E-04	~	4.11E-04	~	4.18E-04	<	4.17E-04	<	4.07E-04	<	3.99E-04	<	4.09E-04
Trich kroethene (TCE) Dibromoch kromethane	~	2.53E-04	~	2.59E-04	~	2.64E-04	<	2.63E-04	<	2.57E-04	<	2.51E-04	<	2.58E-04
1.1.2—Trich loroethane	~	3.95E-04	~	4.05E-04	~	4.12E-04	<	4.10E-04	<	4.01E-04	<	3.93E-04	<	4.03E-04
-,-,-	`	3.23E-04 JB		2.35E-04 B		1.41E-04 JB		4.20E-04 JB		2.47E-04 JB		2.68E-04 JB		2.72E-04
Ben zene trans-1,3-Dich koropropene	<	4.74E-04	<	4.86E-04	<	4.95E-04	<	4.93E-04	<	4.82E-04	<	4.72E-04	<	4.84E-04
Bromoform	~	2.08E-04	<	2.14E-04	<	2.17E-04	<	2.17E-04	<	2.12E-04	<	2.07E-04	<	2.12E-04
4-Methyl-2-Pentanone (MIBK)	~	1.05E-02	<	1.08E-02	<	1.10E-02	<	1.09E-02	<	1.07E-02	<	1.05E-02	<	1.07E-02
2-Hexanone	<	1.05E-02	~	1.08E-02	<	1.10E-02	<	1.09E-02	<	1.07E-02	<	1.05E-02	<	1.07E-02
Tetrach loroethene (PCE)	~	3.17E-04	2	3.26E-04	<	3.31E-04	<	3.30E-04	<	3.23E-04	<	3.16E-04	<	3.24E-04
1,1,2,2-Tetrachloroethane	~	3.14E-04	<	3.22E-04	<	3.27E-04	<	3.26E-04	<	3.19 E- 04	<	3.12E-04	<	3.20E-04
Toluene	•	1.14E-04 J		1.41E-04 B		5.96E-05 J		1.66E-04 J		8.13E-05 J		7.96E-05 J		1.07E-04
Chloroben zene	<	4.68E-04	<	4.80E-04	<	4.88E-04	<	4.86E-04	<	4.75E-04	<	4.65E-04	<	4.77E-04
Ethylben zene	~	4.96E-04	~	5.08E-04	<	5.17E-04	<	5.16E-04	<	5.04E-04	<	4.93E-04	<	5.06E-04
Styrene	~	5.05E-04	<	5.18E-04	<	5.27E-04		5.26E-05 J	<	5.14E-04	<	5.03E-04	≤	4.37E-04
Xylenes (total)	_	5.95E-05 J	•	5.08E-05 B	<	5.17E-04		8.25E-05 J	<	5.04E-04	<	4.93E-04	≤	2.85E-04
2-Chloroethyl vinyl ether	<	1.98E-03	<	2.03E-03	<	2.06E-03	<	2.06E-03	<	2.01E-03	<	1.97E-03	<	2.02E-03
and to to come and a second	•		-											

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E= Estimated value above the detection limit.

(2) Detection limit values included in overall average.

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, AL

SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS AFTERBURNER DISCHARGE STACK

TEST DATA:														
Test run number		2		2		2		2		2		2		2
Test location		OUTLET		OUTLET		OUILET		OUILET		OUILET		OUTLET		OUILET
Test date		02-02-96		02-02-96		02-02-96		02-02-96		02-02-96		02-02-96		
Test time		1419-1459		1542-1622		1628-1708		1730-1810		1825-1914		1925-2005		
Test tube pair		1		2		3		4		5		6	A	VERAGE (2)
•														
VOST EMISSIONS (lb/hr):														
Chloromethane (Methyl Chloride)		4.16E-05		3.28E-04 E		1.27E-04		6.48E-05		5.85E-05		1.10E-04		1.22E-04
Bromomethane (Methyl Bromide)		1.09E-05		2.95E-05		1.55E-05		1.41E-05		1.19E-05		2.39E-05		1.76E-05
Vinyl Chloride	<	1.60E-05	<	1.64E-05	<	1.67E-05	<	1.66E-05	<	1.62E-05	<	1.59E-05	<	1.63E-05
Chloroethane (Ethyl Chloride)	<	1.60E-05	<	1.64E-05	<	1.67E-05	<	1.66E-05	<	1.62E-05	<	1.59E-05	<	1.63E-05
Methylene chloride		8.41E-06 JB		1.25E-05 JB		1.57E-05 JB		1.50E-05 JB		1.03E-05 JB		1.20E-05 JB		1.23E-05
Acetone		5.62E-04		1.53E-03		4.42E-04 J		5.95E-04 J		5.38E-04		5.60E-04		7.04E-04
Carbon Disulfide		1.28E-06 J	<	8.19E-06	<	8.34E-06		1.16E-06 J		1.46E-06 J		1.59E-06 J	≤	3.67E-06
1,1-Dichloroethene	<	7.99E-06	<	8.19 E- 06	<	8.34E-06	<	8.31E-06	<	8.12E-06	<	7.95E-06	<	8.15E-06
1, I-Dichloroethane	<	7.99E-06	<	8.19E-06	<	8.34E-06	<	8.31E-06	<	8.12E-06	<	7.95E-06	<	8.15E-06
1,2-Dichloroethene (trans)	<	7.99E-06	<	8.19E-06	<	8.34E-06	<	8.3 IE-06	<	8.12E-06	<	7.95E-06	<	8.15E-06
Chloroform		3.26E-06 J		3.26E-06 J		3.26E-06 J		3.26E-06 J		3.26E-06 J		3.26E-06 J		3.26E-06
1,2-Dichloroethane (EDC)	<	7.99E-06	<	8.19E-06	<	8.34E-06	<	8.31E-06	<	8.12E-06	<	7.95E-06	<	8.15E-06
2-Butanone (MEK)	<	1.60E-04	<	1.64E-04	<	1.67E-04	<	1.66E-04	<	1.62E-04	<	1.59E-04	<	1.63E-04
1,1,1-Trichlorcethane (TCA)	<	7.99E-06	<	8.19E-06	<	8.34E-06	<	8.31E-06	<	8.12E-06	<	7.95E-06	<	8.15E-06
Carbon Tetrachloride	<	7.99E-06	<	8.19E-06	<	8.34E-06	<	8.31E-06	<	8.12E-06	<	7.95E-06	<	8.15E-06
Vinylacetate	<	3.20E-05	<	3.28E-05	<	3.34E-05	<	3.32E-05	<	3.25E-05	<	3.18E-05	<	3.26E-05
Bromodich loromethane	<	7.99E-06	<	8.19E-06	<	8.34E-06	<	8.31E-06	<	8.12E-06	<	7.95E-06	<	8.15E-06
1,2-Dichloropropane	<	7.99E-06	<	8.19E-06	<	8.34E-06	<	8.31E-06	<	8.12E-06	<	7.95E-06	<	8.15E-06
cis-1,3-Dich loropropene	<	7.99E-06	<	8.19E-06	<	8.34E-06	<	8.31E-06	<	8.12E-06	<	7.95E-06	<	8.15E-06
Trich loroethene (TCE)	<	7.99E-06	<	8.19E-06	<	8.34E-06	<	8.31E-06	<	8.12E-06	<	7.95E-06	<	8.15E-06
Dibromoch loromethane	<	7.99E-06	<	8.19E-06	<	8.34E-06	<	8.31E-06	<	8.12E-06	<	7.95E-06	<	8.15E-06
1,1,2-Trichlorcethane	<	7.99E-06	<	8.19E-06	<	8.34E-06	<	8.31E-06	<	8.12E-06	<	7.95E-06	<	8.15E-06
Benzene		3.84E-06 JB		2.79E-06 JB		1.67E-06 JB		4.99E-06 JB		2.92E-06 JB		3.18E-06 JB		3.23E-06
trans-1,3-Dich loropropene	<	7.99E-06	<	8.19E-06	<	8.34E-06	<	8.31E-06	<	8.12E-06	<	7.95E-06	<	8.15E-06
Bromoform	<	7.99E-06	<	8.19E-06	<	8.34E-06	<	8.31E-06	<	8.12E-06	<	7.95E-06	<	8.15E-06
4-Methyl-2-Pentanone (MIBK)	<	1.60E-04	<	1.64E-04	<	1.67E-04	<	1.66E-04	<	1.62E-04	<	1.59E-04	<	1.63E-04
2-Hexanone	<	1.60E-04	<	1.64E-04	<	1.67E-04	<	1.66E-04	<	1.62E-04	<	1.59E-04	<	1.63E-04
Tetrach loroethene (PCE)	<	7.99E-06	<	8.19E-06	<	8.34E-06	<	8.31E-06	<	8.12E-06	<	7.95E-06	<	8.15E-06
1,1,2,2-Tetrach loroethane	<	7.99E-06	<	8.19E-06	<	8.34E-06	<	8.31E-06	<	8.12E-06	<	7.95E-06	<	8.15E-06
Toluene		1.60E-06 J		1.97E-06 J		8.34E-07 J		2.33E-06 J		1.14E-06 J		1.11E-06 J		1.50E-06
Chlorobenzene	<	7.99E-06	<	8.19E-06	<	8.34E-06	<	8.31E-06	<	8.12E-06	<	7.95E-06	<	8.15E-06
Ethylbenzene	<	7.99E-06	<	8.19E-06	<	8.34E-06	<	8.3 LE-06	<	8.12E-06	<	7.95E-06	<	8.15E-06
Styrene	<	7.99E-06	<	8.19E-06	<	8.34E-06		8.31E-07 J	<	8.12E-06	<	7.95E-06	≤	6.91E-06
Xylenes (total)		9.59E-07 J		8.19E-07 J	<	8.34E-06		1.33E-06 J	<	8.12E-06	<	7.95E-06	≤	4.59E-06
2-Chloroethyl vinyl ether	<	3.20E-05	<	3.28E-05	<	3.34E-05	<	3.32E-05	<	3.25E-05	<	3.18E-05	<	3.26E-05

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E= Estimated value above the detection limit.

(2) Detection limit values included in overall average.

TEST DATA:														
Test run number		2		2		2		2		2		2		2
Test location		OUTLET		OUTLET		OUILET		OUTLET		OUILET		OUILET		OUTLET
Test date		0 2-02⁻9 6		0 2-02-9 6		02-02-96		02-02-96		02 - 02-96		02-02-96		
Test time		1419-1459		1542-1622		1628-1708		1730-1810		1825-1914		1925-2005		(2)
Test tube pair		1		2		3		4		5		6	Α'	VERAGE ⁽²⁾
VOST EMISSIONS (g/sec):														
Chloromethane (Methyl Chloride)		5.24E-06		4.13E-05 E		1.60E-05		8.17E-06		7.37E-06		1.38E-05		1.53E-05
Bromomethane (Methyl Bromide)		1.37E-06		3.72E-06		1.95E-06		1.78E-06		1.49E-06		3.01E-06		2.22E-06
Vinyl Chloride	<	2.01E-06	<	2.06E-06	<	2.10E-06	<	2.09E-06	<	2.05E-06	<	2.00E-06	<	2.05E-06
Chloroethane (Ethyl Chloride)	<	2.01E-06	<	2.06E-06	<	2.10E-06	<	2.09E-06	<	2.05E-06	<	2.00E-06	<	2.05E-06
Methylene chloride		1.06E-06 JB		1.57E-06 JB		1.98E-06 JB		1.89E-06 JB		1.30E-06 JB		1.52E-06 JB		1.55E-06
Acetone		7.08E-05		1.92E-04		5.57E-05 J		7.50E-05 J		6.78E-05		7.05E-05		8.87E-05
Carbon Disulfide		1.61E-07 J	<	1.03E-06	<	1.05E-06		1.47E-07 J		1.84E-07 J		2.00E-07 J	≤	4.63E-07
1,1-Dichloroethene	<	1.01E-06	<	1.03E-06	<	1.05E-06	<	1.05E-06	<	1.02E-06	<	1.00E-06	<	1.03E-06
1,1-Dichloroethane	<	1.01E-06	<	1.03E-06	<	1.05E-06	<	1.05E-06	<	1.02E-06	<	1.00E-06	<	1.03E-06
1,2-Dichloroethene (trans)	<	1.01E-06	<	1.03E-06	<	1.05E-06	<	1.05E-06	<	1.02E-06	<	1.00E-06	<	1.03E-06
Chloroform		4.11E-07 J		4.11E-07 J		4.11E-07 J		4.11E-07 J		4.11E-07 J		4.11E-07 J		4.11E-07
1,2-Dichloroethane (EDC)	<	1.01E-06	<	1.03E-06	<	1.05E-06	<	1.05E-06	<	1.02E-06	<	1.00E-06	<	1.03E-06
2-Butanone (MEK)	<	2.01E-05	<	2.06E-05	<	2.10E-05	<	2.09E-05	<	2.05E-05	<	2.00E-05	<	2.05E-05
1,1,1-Trich loroethane (TCA)	<	1.01E-06	<	1.03E-06	<	1.05E-06	<	1.05E-06	<	1.02E-06	<	1.00E-06	<	1.03E-06
Carbon Tetrachloride	<	1.01E-06	<	1.03E-06	<	1.05E-06	<	1.05E-06	<	1.02E-06	<	1.00E-06	<	1.03E-06
Vinvlacetate	<	4.03E-06	<	4.13E-06	<	4.20E-06	<	4.19E-06	<	4.09E-06	<	4.01E-06	<	4.11E-06
Bromodich kromethane	<	1.01E-06	<	1.03E-06	<	1.05E-06	<	1.05E-06	<	1.02E-06	<	1.00E-06	<	1.03E-06
1.2-Dichloropropane	<	1.01E-06	<	1.03E-06	<	1.05E-06	<	1.05E-06	<	1.02E-06	<	1.00E-06	<	1.03E-06
cis-1,3-Dichloropropene	<	1.01E-06	<	1.03E-06	<	1.05E-06	<	1.05E-06	<	1.02E-06	<	1.00E-06	<	1.03E-06
Trichloroethene (TCE)	<	1.01E-06	<	1.03E-06	<	1.05E-06	<	1.05E-06	<	1.02E-06	<	1.00E-06	<	1.03E-06
Dibromoch loromethane	<	1.01E-06	<	1.03E-06	<	1.05E-06	<	1.05E-06	<	1.02E-06	<	1.00E-06	<	1.03E-06
1.1.2-Trich lorcethane	<	1.01E-06	<	1.03E-06	<	1.05E-06	<	1.05E-06	<	1.02E-06	<	1.00E-06	<	1.03E-06
Benzene		4.83E-07 JB		3.51E-07 JB		2.10E-07 JB		6.28E-07 JB		3.68E-07 JB		4.01E-07 JB		4.07E-07
trans-1.3-Dichloropropene	<	1.01E-06	<	1.03E-06	<	1.05E-06	<	1.05E-06	<	1.02E-06	<	1.00E-06	<	1.03E-06
Bromoform	<	1.01E-06	<	1.03E-06	<	1.05E-06	<	1.05E-06	<	1.02E-06	<	1.00E-06	<	1.03E-06
4-Methyl-2-Pentanone (MIBK)	<	2.01E-05	<	2.06E-05	<	2.10E-05	<	2.09E-05	<	2.05E-05	<	2.00E-05	<	2.05E-05
2-Hexanone	<	2.01E-05	<	2.06E-05	<	2.10E-05	<	2.09E-05	<	2.05E-05	<	2.00E-05	<	2.05E-05
Tetrach loroethene (PCE)	<	1.01E-06	<	1.03E-06	<	1.05E-06	<	1.05E-06	<	1.02E-06	<	1.00E-06	<	1.03E-06
1.1.2.2-Tetrach loroethane	<	1.01E-06	<	1.03E-06	<	1.05E-06	<	1.05E-06	<	1.02E-06	<	1.00E-06	<	1.03E-06
Toluene		2.01E-07 J		2.48E-07 J		1.05E-07 J		2.93E-07 J		1.43E-07 J		1.40E-07 J		1.89E-07
Chlorobenzene	<	1.01E-06	<	1.03E-06	<	1.05E-06	<	1.05E-06	<	1.02E-06	<	1.00E-06	<	1.03E-06
Ethylbenzene	<	1.01E-06	<	1.03E-06	<	1.05E-06	<	1.05E-06	<	1.02E-06	<	1.00E-06	<	1.03E-06
Styrene	<	1.01E-06	<	1.03E-06	<	1.05E-06		1.05E-07 J	<	1.02E-06	<	1.00€-06	≤	8.70E-07
Xylenes (total)		1.21E-07 J		1.03E-07 J	<	1.05E-06		1.68E-07 J	<	1.02E-06	<	1.00E-06	≤	5.78E-07
2-Chloroethyl vinyl ether	<	4.03E-06	<	4.13E-06	<	4.20E-06	<	4.19E-06	<	4.09E-06	<	4.01E-06	<	4.11E-06

 $B = \mbox{Compound also detected in blank. Reported values are not blank corrected.} \\ J = \mbox{Estimated value below the detection limit.} \\ E = \mbox{Estimated value above the detection limit.} \\ (2) \mbox{Detection limit values included in overall average.} \\$

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, AL

SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS AFTERBURNER DISCHARGE STACK

TEST DATA:													
Test run number		3		3		3		3		3		3	
Test location		OUTLET		OUTLET		OUTLET		OUILET		OUTLET		OUTLET	
Test date		02-04-96		02-04-96		0 2- 04 -9 6		02-04-96		0 2-04-9 6		02 - 04 -9 6	
Test time		1418-1458		1503-1543		1600-1640		1652-1750		1802-1842		1910-1950	
Test tube pair		1		2		3		4		5		6	
rest tace pair		-											
SAMPLING DATA:								40.00		40.00		40.00	
Duration, minutes		40.00		40.00		40.00		40.00		1.50		1.50	
Average dry gas meter press. in. H	20	1.50		1.50		1.48		1.49		7.44		6.81	
Average dry gas meter temp. deg. (C	5.94		5.88		5.94		6.38		45.39		44.26	
Average dry gas meter temp. deg. I	P	42.69		42.58		42.69		43.48		505.39		504.26	
Average absolute meter temp. deg.	R	502.69		502.58		502.69		503.48		22.218		23.278	
Actual sample volume, liters		21.420		22.233		20.770		22.441 1.0060		1.0060		1.0060	
Meter box calibration, Y		1.0060		1.0060		1.0060				30.28		30.28	
Barometric pressure, in. Hg		30.28		30.28		30.28		30.28		0.8373		0.8792	
Sample volume, dscf		0.8116		0.8425		0.7869		0.8489 950		950		950	
Volumetric flow rate, dscf/min (1)		950		950		950		930		930		930	
LABORATORY DATA, ng:	M.W.	520,000	J	431.000		730.000		330.000		4600.000	E	2500.000	Е
Chloromethane (Methyl Chloride)	50.49		JВ	237.000	В	78.000		87,000		260.000		360.000	
Bromomethane (Methyl Bromide)	94.95	136.000 100.000			U	100.000	TT	100.000	U		U	100,000	U
Vinyl Chloride	62.50				U	100.000			Ū	100,000	Ū	100.000	U
Chloroethane (Ethyl Chloride)	64.52	100.000 138.905	В	90.390	В	75.723	JВ	78.694	JВ	114.139	ЛВ	95.148	В
Methylene chloride	84.93	2710.608	В	2512.393	ь	1553.266	J	3146.852	J	2188.704		1548.178	
Acetone	58.09	11.000	J	13.000	J	7.000	J	7.000	J	50,000	U	6.000	J
Carbon Disulfide	76.13 96.94	50.000				50.000		50.000		50.000	U	50.000	\mathbf{v}
1,1—Dichloroethene	98.96	50.000				50.000		50.000		50.000	U	50.000	U
1,1-Dichloroethane	96.94	50,000			U	50.000		50.000	U	50.000	U	50.000	U
1,2-Dichloroethene (trans)	119.37	12.968	J	13.463	J	12.574	J	13.565	J	13.380	J	14.049	J
Chloroform	98.96	50.000		50.000		50.000		50.000	U	50.000	U	50.000	U
1,2-Dichloroethane (EDC)	72.12	1000.000			Ū	1000.000	υ	1000.000		1000.000	U	1000.000	U
2-Butanone (MEK) 1,1,1-Trichloroethane (TCA)	133.40	50.000		50.000		50.000	U	50.000	U	50.000	\mathbf{v}	50.000	U
Carbon Tetrachloride	153.81	50.000		50.000		50.000	U	50.000	U	50.000	U	50.000	U
Vinyl acetate	86.09	200.000	-	200,000		200.000	U	200.000	U	200.000	U	200.000	U
Bromodichloromethane	163.83	50.000		50.000	U	50.000	\mathbf{U}	50.000	U	50.000	U	50.000	U
1,2-Dichloropropane	112.99	50,000		50.000		50.000	\mathbf{v}	50.000	U	50.000	U	50.000	U
cis-1,3-Dichloropropene	110.98	50.000		50.000		50.000	U	50.000		50.000		50.000	
Trichloroethene (TCE)	131.38	50.000	U	50.000	U	50.000	\mathbf{U}	50.000	U	50.000		50.000	
Dibromochloromethane	208.29	50.000	U	50.000	\mathbf{U}	50.000	\mathbf{U}	50.000	υ	50.000		50.000	
1,1,2-Trichloroethane	133.40	50.000	U	50.000	U	50.000	\mathbf{U}	50.000		50.000		50.000	
Benzene	78.12	28.000	ЛВ	61.000	JВ	23.000	Љ	25.000	лв	19.000	Љ	18.000	
trans-1,3-Dichloropropene	110.98	50.000	U	50.000	U	50.000	υ	50.000		50.000		50.000	
Bromoform	252.75	50.000	U	50.000	U	50.000	U	50.000		50.000		50.000	
4-Methyl-2-Pentanone (MIBK)	100.18	1000.000	\mathbf{v}	1000.000	U	1000.000		1000.000		1000.000		1000.000	
2-He xanone	100.18	1000.000	U	1000.000	U	1000.000	U	1000.000		1000.000		1000.000	
Tetrachloroethene (PCE)	165.82	50.000	U	50.000	U	50.000	\mathbf{v}	50.000		50.000		50.000	
1,1,2,2-Tetrachloroethane	167.84	50.000	\mathbf{U}	50.000	U	50.000		50.000		50.000		50.000	
Toluene	92.15	11.000	J	25.000		10.000		8.000		7.000	J	5.000	
Chlorobenzene	112.56	50.000	υ			50.000		50.000		50.000		50.000	
Ethylbenzene	106.18	50.000		50.000		50.000		50.000		50.000		50.000	
Styrene	104.16	50.000		12.000		50.000		50.000		50.000		50,000	
Xylenes (total)	106.18	10.000	J	9.000	J	50.000		3.000	J	3.000	J	50.000 200.000	
2-Chloroethyl vinyl ether	106.55	200.000	U	200.000	U	200.000	U	200.000	U	200.000	U	200.000	U

U = detection limit value.

J = Estimated value below the detection limit.

J = Estimated value above the detection limit.

E= Estimated value above the detection limit.

B = Compound also detected in blank. Reported values are not blank corrected.

(1) Volumetric flow rate based on average of Particulate/HCl and MMTL tests flow measurements.

TEST DATA: Test run number		3		3		3		3 OUTLET		3 OUTLET		3 OUTLET		3 OUTLET
Test location		OUTLET		OUILET		OUTLET						02-04-96		OUILEI
Test date		02-04-96		02 - 04-96		02-04-96		02-04-96		02-04-96		1910-1950		
Test time		1418-1458		1503-1543		1600-1640		1652-1750		1802-1842				VERAGE (2)
Test tube pair		1		2		3		4		5		6	А	VERAGE (-)
VOST EMISSIONS (lbs/dscf):														4.075.00
Chloromethane (Methyl Chloride)		1.41E-09 J		1.13E-09		2.05E-09		8.57E-10		1.21E-08 E		6.27E-09 E		3.97E-09
Bromomethane (Methyl Bromide)		3.69E-10 JB		6.20Æ-10 B		2.19E-10		2.26E-10		6.85E-10		9.03E-10		5.04E-10
Vinyl Chloride	<	2.72E-10	<	2.62E-10	<	2.80E-10	<	2.60E-10	<	2.63E-10	<	2.51E-10	<	2.65E-10
Chloroethane (Ethyl Chloride)	<	2.72E-10	<	2.62E-10	<	2.80E-10	<	2.60E-10	<	2.63E-10	<	2.51E-10	<	2.65E-10
Methylene chloride		3.77E-10 B		2.37E-10 B		2.12E-10 JB		2.04E-10 JB		3.01E-10 JB		2.39E-10 B		2.62E-10
Acetone		7.36E-09		6.57E-09		4.35E-09 J		8.17E-09 J		5.76E-09		3.88E-09		6.02E-09
Carbon Disulfide		2.99E-11 J		3.40E-11 J		1.96E-11 J		1.82E-11 J	<	1.32E-10		1.50€-11 J	≤	4.14E-11
1,1-Dichloroethene	<	1.36E-10	<	1.31E-10	<	1.40E-10	<	1.30E-10	<	1.32E-10	<	1.25E-10	<	1.32E-10
1.1-Dichloroethane	<	1.36E-10	<	1.31E-10	<	1.40E-10	<	1.30E-10	<	1.32E-10	<	1.25E-10	<	1.32E-10
1,2-Dichloroethene (trans)	<	1.36E-10	<	1.31E-10	<	1.40E-10	<	1.30E-10	<	1.32E-10	<	1.25E-10	<	1.32E-10
Chloroform		3.52E-11 J		3.52E-11 J		3.52E-11 J		3.52E-11 J		3.52E-11 J		3.52E-11 J		3.52E-11
1,2-Dichloroethane (EDC)	<	1.36E-10	<	1.31E-10	<	1.40E-10	<	1.30E-10	<	1.32E-10	<	1.25E-10	<	1.32E-10
2-Butanone (MEK)	<	2.72E-09	<	2.62E-09	<	2.80E-09	<	2.60E-09	<	2.63E-09	<	2.51E-09	<	2.65E-09
1,1,1-Trichloroethane (TCA)	<	1.36E-10	<	1.31E-10	<	1.40E-10	<	1.30E-10	<	1.32E-10	<	1.25E-10	<	1.32E-10
Carbon Tetrach loride	<	1.36E-10	<	1.31E-10	<	1.40E-10	<	1.30E-10	<	1.32E-10	<	1.25E-10	<	1.32E-10
Vinvlacetate	<	5.43E-10	<	5.23E-10	<	5.60E-10	<	5.19E-10	<	5.27E-10	<	5.01E-10	<	5.29E-10
Bromodich koromethane	<	1.36E-10	<	1.31E-10	<	1.40E-10	<	1.30E-10	<	1.32E-10	<	1.25E-10	<	1.32E-10
1,2-Dichloropropane	<	1.36E-10	<	1.3 IE-10	<	1.40E-10	<	1.30E-10	<	1.32E-10	<	1.25E-10	<	1.32E-10
cis-1,3-Dichloropropene	<	1.36E-10	<	1.31E-10	<	1.40E-10	<	1.30E-10	<	1.32E-10	<	1.25E-10	<	1.32E-10
Trich loroethene (TCE)	<	1.36E-10	<	1.31E-10	<	1.40E-10	<	1.30E-10	<	1.32E-10	<	1.25E-10	<	1.32E-10
Dibromoch loromethane	<	1.36E-10	. <	1.31E-10	<	1.40E-10	<	1.30E-10	<	1.32E-10	<	1.25E-10	<	1.32E-10
1.1.2-Trich loroethane	<	1.36E-10	<	1.31E-10	<	1.40E-10	<	1.30E-10	<	1.32E-10	<	1.25E-10	<	1.32E-10
Benzene		7.61E-11 JB		1.60E-10 JB		6.44E-11 JB		6.49E-11 JB		5.00E-11 JB		4.51E-11 JB		7.67E-11
trans-1,3-Dichloropropene	<	1.36E-10	<	1.31E-10	<	1.40E-10	<	1.30E-10	<	1.32E-10	<	1.25E-10	<	1.32E-10
Bromoform	<	1.36E-10	<	1.31E-10	<	1.40E-10	<	1.30E-10	<	1.32E-10	<	1.25E-10	<	1.32E-10
4-Methyl-2-Pentanone (MIBK)	<	2.72E-09	<	2.62E-09	<	2.80E-09	<	2.60E-09	<	2.63E-09	<	2.5 IE-09	<	2.65E-09
2-Hexanone	<	2.72E-09	<	2.62E-09	<	2.80E-09	<	2.60E-09	<	2.63E-09	<	2.51E-09	<	2.65E-09
Tetrachloroethene (PCE)	<	1.36E-10	<	1.31E-10	<	1.40E-10	<	1.30E-10	<	1.32E-10	<	1.25E-10	<	1.32E-10
1.1.2.2-Tetrachloroethane	<	1.36E-10	<	1.31E-10	<	1.40E-10	<	1.30€-10	<	1.32E-10	<	1.25E-10	<	1.32E-10
Toluene		2.99E-11 J		6.54E-11		2.80E-11 J		2.08E-11 J		1.84E-11 J		1.25E-11 J		2.92E-11
Chlorobenzene	<	1.36E-10	<	1.31E-10	<	1.40E-10	<	1.30E-10	<	1.32E-10	<	1.25E-10	<	1.32E-10
Ethylben zene	<	1.36E-10	<	1.31E-10	<	1.40E-10	<	1.30E-10	<	1.32E-10	<	1.25E-10	<	1.32E-10
Styrene	ζ.	1.36E-10		3.14E-11 J	<	1.40E-10	<	1.30E-10	<	1.32E-10	<	1.25E-10	≤	1.16E-10
Xylenes (total)		2.72E-11 J		2.35E-11 J	<	1.40E-10		7.79E-12 J		7.90E-12 J	<	1.25E-10	≤	5.53E-11
2-Chloroethyl vinyl ether	<	5.43E-10	<	5.23E-10	<	5.60E-10	<	5.19E-10	<	5.27E-10	<	5.01E-10	<	5.29E-10
2 CHRICOHIJI THIJI OHOL	•		-											

 $B = \mbox{Compound also detected in blank. Reported values are not blank corrected.} \\ J = \mbox{Estimated value below the detection limit.} \\ E = \mbox{Estimated value above the detection limit.} \\ (2) \mbox{Detection limit values included in overall average.} \\$

ALABAMA ARMY AMMUNITION PLANT

CHILDERSBURG, AL

SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS AFTERBURNER DISCHARGE STACK

TEST DATA: Test run number Test location Test date Test time Test tube pair	3 OUIL 02-04-9 1418-14 1	96	3 OUILET 02-04-96 1503-1543 2		3 OUTLET 02-04-96 1600-1640 3		3 OUTLET 02-04-96 1652-1750 4		3 OUILET 02-04-96 1802-1842 5		3 OUILET 02-04-96 1910-1950 6		3 OUILET VERAGE ⁽²⁾
VOST EMISSIONS (ug/dscm):									1.94E+02 E		1.00E+02 E		6.36E+01
Chloromethane (Methyl Chloride)	2.26E+		1.81E+01		3.28E+01		1.37E+01		1.94E+02 E 1.10E+01		1.45E+01		8.07E+00
Bromomethane (Methyl Bromide)	5.92E4		9.93E+00 B		3.50E+00		3.62E+00 4.16E+00	<	1.10E+01 4.22E+00	<	4.02E+00	<	4.24E+00
Vinyl Chloride	< 4.35E4			<	4.49E+00	<	4.16E+00	~	4.22E+00	~	4.02E+00	~	4.24E+00
Chloroethane (Ethyl Chloride)	< 4.35E-			<	4.49E+00	<		•	4.22E+00 JB	•	3.82E+00 B	`	4.19E+00
Methylene chloride	6.04E		3.79E+00 B		3.40E+00 JB		3.27E+00 JB		9.23E+01		6.22E+01		9.64E+01
Acetone	1.18E		1.05E+02		6.97E+01 J		1.31E+02 J 2.91E-01 J	_	2.11E+00		2.41E-01 J	_	6.63E-01
Carbon Disulfide	4.79E		5.45E-01 J		3.14E-01 J				2.11E+00	<	2.01E+00	<u><</u>	2.12E+00
1,1-Dichloroethene	< 2.18E4			<	2.24E+00	<	2.08E+00	<	2.11E+00		2.01E+00	~	2.12E+00
1,1-Dichloroethane	< 2.18E		2.10E+00	<	2.24E+00	<	2.08E+00	<		<	2.01E+00	<	2.12E+00 2.12E+00
1,2-Dich loroethene (trans)	< 2.18E			<	2.24E+00	<	2.08E+00	<	2.11E+00	•	5.64E-01 J	•	5.64E-01
Chloroform	5.64E		5.64E-01 J		5.64E-01 J		5.64E-01 J		5.64E-01 J		2.01E+00		2.12E+00
1,2-Dichloroethane (EDC)	< 2.18E4			<	2.24E+00	<	2.08E+00	<	2.11E+00	<		<	4.24E+01
2-Butanone (MEK)	< 4.35E4	Ю1 <	4.19E+01	<	4.49E+01	<	4.16E+01	<	4.22E+01	<	4.02E+01	<	
1,1,1-Trichloroethane (TCA)	< 2.18E		2.10E+00	<	2.24E+00	<	2.08E+00	<	2.11E+00	<	2.01E+00	<	2.12E+00
Carbon Tetrachloride	< 2.18E-	Ю0 <	2.10E+00	<	2.24E+00	<	2.08E+00	<	2.11E+00	<	2.01E+00	<	2.12E+00
Vinylacetate	< 8.70E	ноо <	8.38E+00	<	8.97E+00	<	8.32E+00	<	8.43E+00	<	8.03E+00	<	8.47E+00
Bromodich loromethane	< 2.18E	Ю0 <	2.10E+00	<	2.24E+00	<	2.08E+00	<	2.11E+00	<	2.01E+00	<	2.12E+00
1,2-Dichloropropane	< 2.18E+	+00 <	2.10E+00	<	2.24E+00	<	2.08E+00	<	2.11E+00	<	2.01E+00	<	2.12E+00
cis-1,3-Dichloropropene	< 2.18E	+00 <	2.10E+00	<	2.24E+00	<	2.08E+00	<	2.11E+00	<	2.01E+00	<	2.12E+00
Trichloroethene (TCE)	< 2.18E	+ 00 <	2.10E+00	<	2.24E+00	<	2.08E+00	<	2.11E+00	<	2.01E+00	<	2.12E+00
Dibromoch loromethane	< 2.18E	H00 <	2.10E+00	<	2.24E+00	<	2.08E+00	<	2.11E+00	<	2.01E+00	<	2.12E+00
1,1,2-Trichloroethane	< 2.18E	H00 <	2.10E+00	<	2.24E+00	<	2.08E+00	<	2.11E+00	<	2.01E+00	<	2.12E+00
Benzene	1.22E	ю0 ЛВ	2.56E+00 JB		1.03E+00 JB		1.04E+00 JB		8,01E-01 JB		7.23E-01 JB		1.23E+00
trans-1,3-Dich loropropene	< 2.18E	ю <		<	2.24E+00	<	2.08E+00	<	2.11E+00	<	2.01E+00	<	2.12E+00
Bromoform	< 2.18E	Ю0 <	2.10E+00	<	2.24E+00	<	2.08E+00	<	2.11E+00	<	2.01E+00	<	2.12E+00
4-Methyl-2-Pentanone (MIBK)	< 4.35E-	Ю1 <	4.19E+01	<	4.49E+01	<	4.16E+01	<	4.22E+01	<	4.02E+01	<	4.24E+01
2-Hexanone	< 4.35E-	> 104	4.19E+01	<	4.49E+01	<	4.16E+01	<	4.22E+01	<	4.02E+01	<	4.24E+01 2.12E+00
Tetrach loroethene (PCE)	< 2.18E-		2.10E+00	<	2.24E+00	<	2.08E+00	<	2.11E+00	<	2.01E+00	<	
1,1,2,2-Tetrach loroethane	< 2.18E			<	2.24E+00	<	2.08E+00	<	2.11E+00	<	2.01E+00	<	2.12E+00 4.67E-01
Toluene	4.79E		1.05E+00		4.49E-01 J		3.33E-01 J		2.95E-01 J		2.01E-01 J		2.12E+00
Chloroban zene	< 2.18E-			<	2.24E+00	<	2.08E+00	<	2.11E+00	<	2.01E+00	<	2.12E+00 2.12E+00
Ethylbenzene	< 2.18E-			<	2.24E+00	<	2.08E+00	<	2.11E+00	<	2.01E+00	<	2.12E+00 1.85E+00
Styrene	< 2.18E-		5.03E-01 J	<	2.24E+00	<		<	2.11E+00	<	2.01E+00	≤	8.86E-01
Xylenes (total)	4.35E		3.77E-01 J	<	2.24E+00		1.25E-01 J		1.27E-01 J	<	2.01E+00	≤	
2-Chloroethyl vinyl ether	< 8.70E-	ю0 <	8.38E+00	<	8.97E+00	<	8.32E+00	<	8.43E+00	<	8.03E+00	<	8.47E+00

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E= Estimated value above the detection limit.

(2) Detection limit values included in overall average.

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, AL

SUMMARY OF VOLATILE ORGANICS TEST DATA AND TEST RESULTS AFTERBURNER DISCHARGE STACK

TEST DATA:														
Test run number		3		3		3		3		3		3		3
Test location		OUTLET		OUTLET		OUTLET		OUTLET		OUTLET		OUILET		OUTLET
Test date		02 - 04 -9 6		0 2-04-9 6		02-04-96		0 2-04-9 6		0 2-04-9 6		02 -04-9 6		
Test time		1418-1458		1503-1543		1600-1640		1652-1750		1802-1842		1910-1950		
Test tube pair		1		2		3		4		5		6	Α	VERAGE (2)
VOST EMISSIONS (ppm/v):														
Chloromethane (Methyl Chloride)		1.08E-02 J		8.61E-03		1.56E-02		6.54E-03		9.24E-02 E		4.78E-02 E		3.03E-02
Bromomethane (Methyl Bromide)		1.50E-03 JB		2.52E-03 B		8.87E-04		9.17E-04		2.78E-03		3.66E-03		2.04E-03
Vinyl Chloride	<	1.67E-03	<	1.61E-03	<	1.73E-03	<	1.60E-03	<	1.62E-03	<	1.55E-03	<	1.63E-03
Chloroethane (Ethyl Chloride)	<	1.62E-03	<	1.56E-03	<	1.67E-03	<	1.55E-03	<	1.57E-03	<	1.50E-03	<	1.58E-03
Methylene chloride		1.71E-03 B		1.07E-03 B		9.63E-04 JB		9.27E-04 JB		1.36E-03 JB		1.08E-03 B		1.19E-03
Acetone		4.88E-02		4.36E-02		2.89E-02 J		5.42E-02 J		3.82E-02		2.58E-02		3.99E-02
Carbon Disulfide		1.51E-04 J		1.72E-04 B		9.93E-05 J		9.20E-05 J	<	6.66E-04		7.62E-05 J	≤	2.10E-04
1.1-Dichloroethene	<	5.40E-04	<	5.20E-04	<	5.57E-04	<	5.16E-04	<	5.23E-04	<	4.98E-04	<	5.26E-04
1.1-Dich loroethane	<	5.29E-04	<	5.09E-04	<	5.45E-04	<	5.06E-04	<	5.13E-04	<	4.88E-04	<	5.15E-04
1.2-Dich loroethene (trans)	<	5.40E-04	<	5.20E-04	<	5.57E-04	<	5.16E-04	<	5.23E-04	<	4.98E-04	<	5.26E-04
Chloroform		1.14E-04 J		1.14E-04 B		1.14E-04 J		1.14E-04 J		1.14E-04 J		1.14E-04 J		1.14E-04
1,2-Dich loroethane (EDC)	<	5.298-04	<	5.09E-04	<	5.45E-04	<	5.06E-04	<	5.13E-04	<	4.88E-04	<	5.15E-04
2-Butanone (MEK)	<	1.45E-02	<	1.40E-02	<	1.50E-02	<	1.39E-02	<	1.41E-02	<	1.34E-02	<	1.41E-02
1,1,1-Trichloroethane (TCA)	<	3.92E-04	<	3.78E-04	<	4.05E-04	<	3.75E-04	<	3.80E-04	<	3.62E-04	<	3.82E-04
Carbon Tetrachloride	<	3,40E-04	<	3.28E-04	<	3.51E-04	<	3.25E-04	<	3.30E-04	<	3.14E-04	<	3.3 IE-04
Vinvlacetate	<	2.43E-03	<	2.34E-03	<	2.51E-03	<	2.32E-03	<	2.36E-03	<	2.24E-03	<	2.37E-03
Bromodich loromethane	<	3.19E-04	<	3.08E-04	<	3.29E-04	<	3.05E-04	<	3.10E-04	<	2.95E-04	<	3.11E-04
1,2-Dichloropropane	<	4.63E-04	<	4.46E-04	<	4.78E-04	<	4.43E-04	<	4.49E-04	<	4.28E-04	<	4.5 IE-04
cis-1.3-Dichloropropene	<	4.72E-04	<	4.54E-04	<	4.86E-04	<	4.51E-04	<	4.57E-04	<	4.35E-04	<	4.59E-04
Trichloroethene (TCE)	<	3.98E-04	<	3.84E-04	<	4.11E-04	<	3.81E-04	<	3.86E-04	<	3.68E-04	<	3.88E-04
Dibromochloromethane	<	2.51E-04	<	2.42E-04	<	2.59E-04	<	2.40E-04	<	2.44E-04	<	2.32E-04	<	2.45E-04
1.1.2-Trichloroethane	<	3.92E-04	<	3.78E-04	<	4.05E-04	<	3.75E-04	<	3.80E-04	<	3.62E-04	<	3.82E-04
Benzene		3.75E-04 JB		7.87E-04 B		3.18E-04 JB		3.20E-04 JB		2.47E-04 JB		2.23E-04 JB		3.78E-04
trans-1,3-Dichloropropene	<	4.72E-04	<	4.54E-04	<	4.86E-04	<	4.51E-04	<	4.57E-04	<	4.35E-04	<	4.59E-04
Bromoform	<	2.07E-04	<	1.99E-04	<	2.14E-04	<	1.98E-04	<	2.01E-04	<	1.91E-04	<	2.02E-04
4-Methyl-2-Pentanone (MIBK)	<	1.04E-02	<	1.01E-02	<	1.08E-02	<	9.99E-03	<	1.01E-02	<	9.65E-03	<	1.02E-02
2-Hexanone	<	1.04E-02	<	1.01E-02	<	1.08E-02	<	9.99E-03	<	1.01E-02	<	9.65E-03	<	1.02E-02
Tetrachloroethene (PCE)	<	3.16E-04	<	3.04E-04	<	3.26E-04	<	3.02E-04	<	3.06E-04	<	2.91E-04	<	3.07E-04
1,1,2,2-Tetrachloroethane	<	3.12E-04	<	3.00E-04	<	3.22E-04	<	2.98E-04	<	3.02E-04	<	2.88E-04	<	3.04E-04
Toluene		1.25E-04 J		2.74E-04		1.17E-04 J		8.69E-05 J		7.71E-05 J		5.24E-05 J		1.22E-04
Chlorobenzene	<	4.65E-04	<	4.48E-04	<	4.80E-04	<	4.45E-04	<	4.51E-04	<	4.29E-04	<	4.53E-04
Ethylbenzene	<	4.93E-04	<	4.75E-04	<	5.08E-04	<	4.71E-04	<	4.78E-04	<	4.55E-04	<	4.80E-04
Styrene	<	5.02E-04		1.16E-04 B	<	5.18E-04	<	4.80E-04	<	4.87E-04	<	4.64E-04	≤	4.28E-04
Xylenes (total)		9.86E-05 J		8.55E-05 B	<	5.08E-04		2.83E-05 J		2.87E-05 J	<	4.55E-04	≤	2.01E-04
2-Chloroethyl vinyl ether	<	1.96E-03	<	1.89E-03	<	2.031 €-03	<	1.88E-03	<	1.90E-03	<	1.81E-03	<	1.91E-03
• •														

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E= Estimated value above the detection limit.

(2) Detection limit values included in overall average.

TEST DATA:						_		3		3	•	3		3
Test run number		3		3		3		OUTLET		OUILET		OUILET		OUTLET
Test location		OUILET		OUTLET		OUILET		02-04-96		02-04-96		02-04-96	•	30111131
Test date		02 - 04-96		02-04-96		02-04-96		1652-1750		1802-1842		1910-1950		
Test time		1418-1458		1503-1543		1600-1640		4		5		6	Δ1	/ERAGE (2)
Test tube pair		1		2		3		4		3		· ·	Α,	LICHOL
VOST EMISSIONS (lb/hr):						4.400.04		4.000.05		6.90E-04 E		3.57E-04 E		2.26E-04
Chloromethane (Methyl Chloride)		8.05E-05 J		6.43E-05		1.17E-04		4.89E-05				5.15E-05		2.87E-05
Bromomethane (Methyl Bromide)		2.11E-05 JB		3.53E-05 B		1.25E-05		1.29E-05		3.90E-05 1.50E-05	<	1.43E-05	<	1.5 IE-05
Vinyl Chloride	<	1.55E-05	<	1.49E-05	<	1.60E-05	<	1.48E-05	<		<	1.43E-05	<	1.5 IE-05
Chloroethane (Ethyl Chloride)	<	1.55E-05	<	1.49E-05	<	1.60E-05	<	1.486-05	<	1.50E-05	<	1.45E-05 B	•	1.49E-05
Methylene chloride		2.15E-05 B		1.35E-05 B		1.21E-05 JB		1.16E-05 JB		1.71E-05 JB				3.43E-04
Acetone		4.20E-04		3.75E-04		2.48E-04 J		4.66E-04 J		3.285-04		2.21E-04 8.58E-07 J		2.36E-06
Carbon Disulfide		1.70E-06 J		1.94E-06 J		1.12E-06 J		1.04E-06 J	<	7.50E-06			≤.	2.54E-06
1,1-Dichloroethene	<	7.7 4E -06	<	7.46E-06	<	7.98 E- 06	<	7.40E-06	<	7.50E-06	<	7.15E-06	< <	
1,1-Dichloroethane	<	7.74E-06	<	7.46E-06	<	7.98E-06	<	7.40E-06	<	7.50E-06	<	7.15E-06		7.54E-06 7.54E-06
1,2-Dich loroethene (trans)	<	7.74E-06	<	7.46E-06	<	7.98E-06	<	7.40E-06	<	7.50E-06	<	7.15E-06	<	2.01E-06
Chloroform		2.01E-06 J		2.01E-06 J		2.01E-06 J		2.01E-06 J		2.01E-06 J		2.01E-06 J		
1,2-Dichloroethane (EDC)	<	7.74E-06	<	7.46E-06	<	7.98E-06	<	7.40E-06	<	7.50E-06	<	7.15E-06	<	7.54E-06
2-Butanone (MEK)	<	1.55E-04	<	1.49E-04	<	1.60E-04	<	1.48E-04	<	1.50E-04	<	1.43E-04	<	1.51E-04
1,1,1-Trichloroethane (TCA)	<	7.74E-06	<	7.46E-06	<	7.98E-06	<	7.40E-06	<	7.50E-06	<	7.15E-06	<	7.54E-06
Carbon Tetrachloride	<	7.74E-06	<	7.46E-06	<	7.98E-06	<	7.40E-06	<	7.50E-06	<	7.15E-06	<	7.54E-06
Vinylacetate	<	3.10E-05	<	2.98E-05	<	3.19E-05	<	2.96E-05	<	3.00E-05	<	2.86E-05	<	3.02E-05
Bromodichloromethane	<	7.74E-06	<	7.46E-06	<	7.98E-06	<	7.40E-06	<	7.50E-06	<	7.15E-06	<	7.54E-06
1,2-Dichloropropane	<	7,74E-06	<	7.46E-06	<	7.98E-06	<	7.40E-06	<	7.50E-06	<	7.15E-06	<	7.5 4E -06
cis-1,3-Dichloropropene	<	7.74E-06	<	7.46E-06	<	7.98E-06	<	7.40 E- 06	<	7.50E-06	<	7.15E-06	<	7.54E-06
Trichloroethene (TCE)	<	7.74E-06	<	7.46E-06	<	7.98E-06	<	7.40E-06	<	7.50E-06	<	7.15E-06	<	7.54E-06
Dibromoch loromethane	<	7.74E-06	<	7.46E-06	<	7.98E-06	<	7.40E-06	<	7.50E-06	<	7.15E-06	<	7.54E-06
1,1,2-Trichloroethane	<	7.74E-06	<	7.46E-06	<	7.98E-06	<	7.40E-06	<	7.50E-06	<	7.15E-06	<	7.5 4E -06
Benzene		4.34E-06 JB		9.10E-06 JB		3.67E-06 JB		3.70E-06 JB		2.85E-06 JB		2.57E-06 JB		4.37E-06
trans-1,3-Dichloropropene	<	7.74E-06	<	7.46E-06	<	7.98E-06	<	7.40E-06	<	7.50E-06	<	7.15E-06	<	7.54E-06
Bromoform	<	7.74E-06	<	7.46E-06	<	7.98E-06	<	7.40E-06	<	7.50E-06	<	7.15E-06	<	7.54E-06
4-Methyl-2-Pentanone (MIBK)	<	1.55E-04	<	1.49E-04	<	1.60E-04	<	1.48E-04	<	1.50E-04	<	1.43E-04	<	1.5 IE-04
2-Hexanone	<	1.55E-04	<	1.49E-04	<	1.60E-04	<	1.48E-04	<	1.50E-04	<	1.43E-04	<	1.5 IE-04
Tetrachloroethene (PCE)	<	7.74E-06	<	7.46E-06	<	7.98E-06	<	7.40E-06	<	7.50E-06	<	7.15E-06	<	7.54E-06
1,1,2,2-Tetrachloroethane	<	7.74E-06	<	7.46E-06	<	7.98E-06	<	7.40E-06	<	7.50E-06	<	7.15E-06	<	7.54E-06
Toluene		1.70E-06 J		3.73E-06		1.60E-06 J		1.18E-06 J		1.05E-06 J		7.15E-07 J		1.66€-06
Chlorobenzene	<	7.74E-06	<	7.46E-06	<	7.98E-06	<	7.40E-06	<	7.50E-06	<	7.15E-06	<	7.54E-06
Eth ylben zene	<	7.74E-06	<	7.46E-06	<	7.98E-06	<	7.40E-06	<	7.50E-06	<	7.15E-06	<	7.54E-06
Styrene	<	7.74E-06		1.79E-06 J	<	7.98E-06	<	7.40E-06	<	7.50E-06	.<	7.15E-06	≲.	6.59E-06
Xylenes (total)		1.55E-06 J		1.34E-06 J	<	7.98E-06		4.44E-07 J		4.50E-07 J	<	7.15E-06	≤	3.15E-06
2-Chloroethyl vinyl ether	<	3.10E-05	<	2.98E-05	<	3.19E-05	<	2.96E-05	<	3.00E-05	<	2.86E-05	<	3.02E-05
Z-Zikiloem yi vinyi emer	•	2.102 00	-											

 $B = \mbox{Compound also detected in blank. Reported values are not blank corrected.} \\ J = \mbox{Estimated value below the detection limit.} \\ E = \mbox{Estimated value above the detection limit.} \\ (2) \mbox{Detection limit values included in overall average.} \\$

TEST DATA: Test run number Test location		3 OUTLET 02-04-96		3 OUTLET 02 - 04 - 96	,	3 OUTLET								
Test date		1418-1458		1503-1543		1600-1640		1652-1750		1802-1842		1910-1950		
Test time		1		2		3		4		5		6	Δ	VERAGE (2)
Test tube pair		1		2		3		7		3		J	Α.	LICHOL
VOST EMISSIONS (g/soc):														
Chloromethane (Methyl Chloride)		1.01E-05 J		8.10E-06		1.47E-05		6.16E-06		8.70E-05 E		4.50E-05 E		2.85E-05
Bromomethane (Methyl Bromide)		2.65E-06 JB		4.45E-06 B		1.57E-06		1.62E-06		4.92E-06		6.48E-06		3.62E-06
Vinvl Chloride	<	1.95E-06	<	1.88E-06	<	2.01E-06	<	1.87E-06	<	1.89E-06	<	1.80E-06	<	1.90E-06
Chloroethane (Ethyl Chloride)	<	1.95E-06	<	1.88E-06	<	2.01E-06	<	1.87E-06	<	1.89E-06	<	1.80E-06	<	1.90E-06
Methylene chloride	-	2.71E-06 B		1.70E-06 B		1.52E-06 JB		1.47E-06 JB		2.16E-06 JB		1.71E-06 B		1.88E-06
Acetone		5.29E-05		4.72E-05		3.13E-05 J		5.87E-05 J		4.14E-05		2.79E-05		4.32E-05
Carbon Disulfide		2.15E-07 J		2.44E-07 J		1.41E-07 J		1.31E-07 J	<	9.45E-07		1.08E-07 J	≤	2.97E-07
1.1-Dichloroethene	<	9.75E-07	<	9.40E-07	<	1.01E-06	<	9.33E-07	<	9.45E-07	<	9.00E-07	~	9.50E-07
1.1-Dichloroethane	2	9.75E-07	~	9.40E-07	~	1.01E-06	<	9.33E-07	<	9.45E-07	<	9.00E-07	<	9.50E-07
	~	9.75E-07	~	9.40E-07	<	1.01E-06	~	9.33E-07	<	9.45E-07	<	9.00E-07	<	9.50E-07
1,2-Dichloroethene (trans)	•	2.53E-07 J	_	2.53E-07 J	•	2.53E-07 J	•	2.53E-07 J		2.53E-07 J	-	2.53E-07 J		2.53E-07
Chloroform	<	9.75E-07	<	9.40E-07	<	1.01E-06	<	9.33E-07	<	9.45E-07	<	9.00E-07	<	9.50E-07
1,2-Dich loroethane (EDC)		1.95E-05	<	1.88E-05	~	2.01E-05	~	1.87E-05	~	1.89E-05	~	1.80E-05	<	1.90E-05
2-Butanone (MEK)	<			9.40E-07	<	1.016-06	~	9.33E-07	<	9.45E-07	~	9.00E-07	<	9.50E-07
1,1,1-Trichloroethane (TCA)	<	9.75E-07 9.75E-07	<	9.40E-07	~	1.01E-06	~	9.33E-07	~	9.45E-07	<	9.00E-07	<	9.50E-07
Carbon Tetrachloride	<		<	3.76E-06	_	4.02E-06	~	3.73E-06	~	3.78E-06	~	3.60E-06	~	3.80E-06
Vinylacetate	<	3.90E-06	<		<		-	9.33E-07	<	9.45E-07	~	9.00E-07	<	9.50E-07
Bromodich loromethane	<	9.75E-07	<	9.40E-07	<	1.01E-06 1.01E-06	<	9.33E-07 9.33E-07	~	9.45E-07	~	9.00E-07	~	9.50E-07
1,2-Dichloropropane	<	9.75E-07	<	9.40E-07	<		<				-			
cis-1,3-Dich loropropene	<	9.75E-07	<	9.40E-07	<	1.01E-06	<	9.33E-07	<	9.45E-07	<	9.00E-07	<	9.50E-07
Trich loroethene (TCE)	<	9.75E-07	<	9.40E-07	<	1.01E-06	<	9.33E-07	<	9.45E-07	<	9.0013-07	<	9.50E-07
Dibromoch loromethane	<	9.75E-07	<	9.40E-07	<	1.01E-06	<	9.33E-07	<	9.45E-07	<	9.0012-07	<	9.50E-07
1,1,2-Trich lorcethane	<	9.75E-07	<	9.40E-07	<	1.01E-06	<	9.33E-07	<	9.45E-07	<	9.00E-07	<	9.50E-07
Benzene		5.46E-07 JB		1.15E-06 JB		4.63E-07 JB		4.66E-07 JB		3.59E-07 JB		3.24E-07 JB		5.51E-07
trans-1,3-Dich loropropene	<	9.75E-07	<	9.40E-07	<	1.01E-06	<	9.33E-07	<	9.45E-07	<	9.00E-07	<	9.50E-07
Bromoform	<	9.75E-07	<	9.4016-07	<	1.01E-06	<	9.33E-07	<	9.45E-07	<	9.00E-07	<	9.50E-07
4-Methyl-2-Pentanone (MIBK)	<	1.95E-05	<	1.88E-05	<	2.01E-05	<	1.87E-05	<	1.89E-05	<	1.80E-05	<	1.90E-05
2-Hexanone	<	1.95E-05	<	1.88E-05	<	2.01E-05	<	1.87E-05	<	1.89E-05	<	1.80E-05	<	1.90E-05
Tetrach loroethene (PCE)	<	9.75E-07	<	9.40E-07	<	1.01E-06	<	9.33E-07	<	9.45E-07	<	9.00E-07	<	9.50E-07
1,1,2,2-Tetrach loroethane	<	9.75E-07	<	9.40E-07	<	1.01E-06	<	9.33E-07	<	9.45E-07	<	9.00E-07	<	9.50E-07
Toluene		2.15E-07 J		4.70E-07		2.01E-07 J		1.49E-07 J		1.32E-07 J		9.00E-08 J		2.10E-07
Chloroben zene	<	9.75E-07	<	9.40E-07	<	1.01E-06	<	9.33E-07	<	9.45E-07	<	9.00E-07	<	9.50E-07
Ethylbenzene	<	9.75E-07	<	9.40E-07	<	1.01E-06	<	9.33E-07	<	9.45E-07	<	9.00E-07	<	9.50E-07
Styrene	<	9.75E-07		2.26E-07 J	<	1.01E-06	<	9.33E-07	<	9.45E-07	<	9.00E-07	≤	8.31E-07
Xylenes (total)		1.95E-07 J		1.69E-07 J	<	1.01E-06		5.60E-08 J		5.67E-08 J	<	9.00E-07	≤	3.97E-07
2-Chloroethyl vinyl ether	<	3.90E-06	<	3.76E-06	<	4.02E-06	<	3.73E-06	<	3.78E-06	<	3.60E-06	<	3.80E-06

B = Compound also detected in blank. Reported values are not blank corrected.

J = Estimated value below the detection limit.

E= Estimated value above the detection limit.

(2) Detection limit values included in overall average.

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA HOT GAS TEST PROGRAM SUMMARY OF METALS TEST DATA AND TEST RESULTS

TEST DATA			
Test run number	T 1	T2	T3
Test location	AFTERBURNER DISCHARGE		
Test date	01 -3 1-96	02 - 02 -9 6	02 - 04-96
Test time period	1834-0103	1406-2011	1415-2026
1			
SAMPLING DATA			
Sampling duration, min.	320.0	320.0	320.0
Nozzle diameter, in.	0.586	0.586	0.586
Cross sectional nozzle area, sq.ft.	0.001873	0.001873	0.001873
Barometric pressure, in. Hg	29.73	29.59	30.28
Avg. orifice press. diff., in H ₂ O	0.60	0.57	0.46
Avg. dry gas meter temp., deg F	53	43	44
Avg. abs. dry gas meter temp., deg. R	513	503	504
Total liquid collected by train, ml	262.6	255.9	196.1
Std. vol. of H ₂ O vapor coll., cu.ft.	12.4	12.0	9.2
Dry gas meter calibration factor	0.9958	0.9958	0.9939
Sample vol. at meter cond., dcf	133.154	130.320	118.896
Sample vol. at std. cond., dscf (1)	135.801	134.777	125.265
Percent of isokinetic sampling	103.3	105.6	103.1
GAS STREAM COMPOSITION DATA			
CO ₂ , % by volume, dry basis	5.7	5.8	6.1
O ₂ , % by volume, dry basis	12.1	11.9	11.9
N ₂ , % by volume, dry basis	82.2	82.3	82.0
Molecular wt. of dry gas, lb/lb mole	29.4	29.4	29.5
H,O vapor in gas stream, prop. by vol.	0.083	0.082	0.069
Mole fraction of dry gas	0.917	0.918	0.931
Molecular wt. of wet gas, lb/lb mole	28.4	28.5	28.7
·			
GAS STREAM VELOCITY AND VOLUMETRIC			
Static pressure, in. Hg	-0.10	-0.10	-0.10
Absolute pressure, in. Hg	29.72	29.58	30.27
Avg. temperature, deg. F	1681	1646	1638
Avg. absolute temperature, deg.R	2141	2106	2098
Pitot tube coefficient	0.84	0.84	0.84
Total number of traverse points	16	16	16
Avg. gas stream velocity, ft./sec.	16.3	15.6	14.3
Stack/duct cross sectional area, sq.fl.	4.59	4.59	4.59
Avg. gas stream volumetric flow, wacf/min.	4480	4290	3920
Avg. gas stream volumetric flow, dscf/min ⁽¹⁾	1010	980	930

⁽¹⁾ Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 in Hg (760 mm Hg)

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA HOT GAS TEST PROGRAM SUMMARY OF METALS TEST DATA AND TEST RESULTS

TEST DATA			
Test run number	T 1	T2	T3
Test location	AFTERBURNER DISCHARGE		
Test date	01-31-96	02-02-96	02-04-96
Test time period	1834-0103	1406-2011	1415-2026
7.00 mm P. 1.00			
METALS LABORATORY REPORT DATA, ug	4.20	1.00	< 11.30
Antimony (Sb)	< 7.65	< 7.70	< 7.60
Arsenic (As)	22.04	0.29	0.22
Barium (Ba) Beryllium (Be)	0.02	< 0.03	< 0.03
Cadmium (Cd)	1.60	0.79	< 0.70
Chromium (Cr)	43.70	44.52	31.89
Lead (Pb)	17.30	3.70	2.50
Mercury (Hg)	0.14	0.25	0.03
Nickel (Ni)	10.53	12.70	2.60
Selenium (Se)	< 8.85	< 8.90	< 8.80
Silver (Ag)	< 2.25	< 2.25	< 2.24
Thallium (II)	< 7.80	< 7.80	< 7.80
METALS CONCENTRATIONS, ug/dscm (1) Antimony (Sb) Arsenic (As) Barium (Ba) Beryllium (Be) Cadmium (Cd) Chromium (Cr) Lead (Pb) Mercury (Hg) Nickel (Ni) Selenium (Se) Silver (Ag) Thallium (Tl)	1.09E+00 <1.99E+00 5.73E+00 5.20E-03 4.16E-01 1.14E+01 4.50E+00 3.64E-02 2.74E+00 <2.30E+00 <5.84E-01 <2.03E+00	2.61E-01 < 2.02E+00 7.60E-02 < 6.55E-03 2.07E-01 1.17E+01 9.70E-01 6.42E-02 3.33E+00 < 2.33E+00 < 5.90E-01 < 2.04E+00	<3.19E+00 <2.14E+00 6.20E-02 <7.05E-03 <1.97E-01 8.99E+00 7.05E-01 8.46E-03 7.33E-01 <2.48E+00 <6.32E-01 <2.20E+00
METALS CONCENTRATIONS, lb/dscf (1) Antimony (Sb) Arsenic (As) Barium (Ba) Beryllium (Be) Cadmium (Cd) Chromium (Cr) Lead (Pb) Mercury (Hg) Nickel (Ni) Selenium (Se) Silver (Ag) Thallium (Tl)	6.81E-11 < 1.24E-10 3.58E-10 3.25E-13 2.60E-11 7.09E-10 2.81E-10 2.27E-12 1.71E-10 < 1.44E-10 < 3.64E-11 < 1.27E-10	1.63E-11 < 1.26E-10 4.74E-12 < 4.09E-13 1.29E-11 7.28E-10 6.05E-11 4.01E-12 2.08E-10 < 1.46E-10 < 3.68E-11 < 1.28E-10	< 1.99E-10 < 1.34E-10 3.87E-12 < 4.40E-13 < 1.23E-11 5.61E-10 4.40E-11 5.28E-13 4.58E-11 < 1.55E-10 < 3.94E-11 < 1.37E-10

 $^{^{(1)}}$ Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 in Hg (760 mm Hg)

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA HOT GAS TEST PROGRAM SUMMARY OF METALS TEST DATA AND TEST RESULTS

TEST DATA			
Test run number	T1	T2	T3
Test location	AFTERBURNER DISCHARGE		
Test date	01 - 31 -9 6	02-02-96	02 - 04 -9 6
Test time period	1834-0103	1406–2011	1415–2026
METALS MASS EMISSION RATES, lb/br			
Antimony (Sb)	4.11E-06	9.54E - 07	< 1.11E-05
Arsenic (As)	< 7.50E-06	< 7.38E-06	< 7.46E-06
Barium (Ba)	2.16E-05	2.78E-07	2.16E-07
Beryllium (Be)	1.96E-08	< 2.40E-08	< 2.45E-08
Cadmium (Cd)	1.57E-06	7.57E-07	< 6.87E-07
Chromium (Cr)	4.28E-05	4.27E-05	3.13E-05
Lead (Pb)	1.70E-05	3.55E-06	2.45E-06
Mercury (Hg)	1.37E-07	2.35E-07	2.95E-08
Nickel (Ni)	1.03E-05	1.22E-05	2.55E-06
Selenium (Se)	< 8.68E-06	< 8.53E-06	< 8.64E-06
Silver (Ag)	< 2.20E-06	< 2.16E-06	< 2.20E-06
Thallium (II)	< 7.65E-06	< 7.48E-06	< 7.66E-06

ALABAMA ARMY AMMUNITION PLANT CHILDERSBURG, ALABAMA HOT GAS TEST PROGRAM

SUMMARY OF HEXAVALENT CHROMIUM TEST DATA AND TEST RESULTS

TEST DATA:			
Test run number	T1	T2	T3
Test location	AFTERBURNER DISCHARGE		
Test date	01-31-96	02 - 02 -9 6	02-04-96
Test time period	1837-0127	1404–2043	1416–2050
SAMPLING DATA:			
Sampling duration, min.	360.0	360.0	360.0
Nozzle diameter, in.	0.586	0.586	0.586
Barometric pressure, in. Hg	29.73	29.59	30.28
Avg. orifice press. diff., in H ₂ O	0.53	0.52	0.45
Avg. dry gas meter temp., deg F	53.11	49.00	44.17
Avg. abs. dry gas meter temp., deg. R	513	509	504
Total liquid collected by train, ml	288.9	276.5	229.5
Std. vol. of H2O vapor coll., cu.ft.	13.6	13.0	10.8
Dry gas meter calibration factor	1.002	1.002	1.002
Sample vol. at meter cond., dcf	158.264	157.762	145.159
Sample vol. at std. cond., dscf (1)	162.292	162.313	154.262
Percent of isokinetic sampling	104.0	104.2	106.1
GAS STREAM COMPOSITION DATA:			
CO ₂ , % by volume, dry basis	5.7	5.8	6.1
O_2 , % by volume, dry basis	12.1	11.9	11.9
CO, % by volume, dry basis	0.0	0.0	0.0
N ₂ , % by volume, dry basis	82.2	82.3	82.0
Molecular wt. of dry gas, lb/lb mole	29.4	29.4	29.5
H2O vapor in gas stream, prop. by vol.	0.077	0.074	0.065
Mole fraction of dry gas	0.923	0.926	0.935
Molecular wt. of wet gas, lb/lb mole	28.5	28.6	28.7
GAS STREAM VELOCITY AND VOLUMETRIC F	LOW DATA:		
Static pressure, in. H ₂ O	-0.10	-0.10	-0.10
Static pressure, in. Hg	-0.007	-0.007	-0.007
Absolute pressure, in. Hg	29.72	29.58	30.27
Avg. temperature, deg. F	1546	1513	1493
Avg. absolute temperature, deg.R	2006	1973	1953
Pitot tube coefficient	0.84	0.84	0.84
Total number of traverse points	12	. 12	12
Avg. gas stream velocity, ft./sec.	16.0	15.7	14.1
Stack/duct cross sectional area, sq.ft.	4.59	4.59	4.59
Avg. gas stream volumetric flow, wacf/min.	4400	4330	3870
Avg. gas stream volumetric flow, dscf/min. (1)	1060	1060	990
LABORATORY REPORT DATA(2)			
Hexavalent Chromium (Cr ⁺⁶), ug	58.94	61.19	45.37
HEXAVALENT CHROMIUM EMISSIONS			
Concentration, lb/dscf	8.01E-10	8.31E-10	6.48E-10
Concentration, ug/dscm	12.83	13.31	10.39
Mass emission rate, lb/hr	5.10E-05	5.29E-05	3.85E-05
1.2000 VIIII VIII I I I I I I I I I I I I I	5.1025 05	U.E. E. U.S.	2,000

Standard conditions = 68 deg. F. (20 deg. C.) and 29.92 in Hg (760 mm Hg)
 Per EPA Cr⁺⁶ method the laboratory results are blank corrected. A blank KOH value of 2.4 ug. per liter was used.
 NOTE: The Cr⁺⁶ values reported above may not be truly representative. The Cr⁺⁶ values exceed the total chromium values obtained using the multi-metals test train. The Cr⁺⁶ test train has not been validated by EPA for use on sources exceeding 300° F.

APPENDIX I

SOURCE EMISSIONS LABORATORY ANALYTICAL DATA REPORTS WITHOUT RAW DATA

SOURCE EMISSIONS LABORATORY ANALYTICAL DATA REPORTS

SEMIVOLATILE ORGANICS (TRIANGLE LABORATORY)

TRIVANGLE LASS

CASE NARRATIVE

Analysis of Samples for the Presence of

Semivolatile Hydrocarbons by

High-Resolution Gas Chromatography / Low-Resolution Mass Spectrometry

METHOD 8270A Rev. 1 (7/92)

Date:

March 20, 1996

Client ID:

Roy F. Weston

TLI Project Number: 36062A

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TRIANGLE LABORATORIES, INC. CASE NARRATIVE

Objective: Analysis of three M23 dioxin extracts for Method 8270 Table 2 (TB2) semivolatile compounds and Tentatively Identified Compounds (TICs).

Method:

Two M23 train samples were received by Triangle Laboratories, Inc. on ice at 11°C on February 2, 1996. An additional three M23 train samples were received on February 6, 1996 at 4°C. all samples were received in good condition. The samples were stored in a cooler at 4°C prior to extraction. The M23 samples were extracted for the dioxin analysis. The resulting extracts were split 50:50 with fifty percent of each extract archived. Please note that this project contains the semivolatile analysis data for only three of the original five archived dioxin extracts. A method blank was prepared by utilizing one milliliter of toluene. Each extract was concentrated to a final volume of 1.0 mL for the semivolatile analysis. The analysis is based on the guidelines of Method 8270A Rev. 1 (7/92). The results reported relate only to the items tested.

The internal standards, 1,4-dichlorobenzene- d_4 , naphthalene- d_8 , acenaphthene- d_{10} , phenanthrene- d_{10} , chrysene- d_{12} , and perylene- d_{12} were added to the extracts such that the final internal standard concentration was 40 ug/mL immediately prior to analysis by GC/MS.

Helium

The GC/MS analysis conditions are listed below:

GC Conditions:

Column:

J&W DB5-625, 30m x .32mm x 1um

Program:

35C, ramp at 12C/min to 285C, hold for 2 min.

ramp at 8.5C/min to 315 C, hold for 6.5 min.

MS Conditions:

Carrier Gas:

Instrument:

HP MSD, Chemsystem and Target data systems

35-550 amu at 1.67 scan/sec

Interface:

Scan:

Capillary, Injector: 250C, Detector: 275C

Report:

Enclosed with the case narrative are the sample identification index, project summary sheets, client and TLI chain of custody sheets, wet laboratory extraction information sheets, GC/MS tracking forms, and analytical run logs. The sample identification index correlates the client sample name, TLI sample number and the analytical file name for the each sample. The project summary sheets list the amounts of analytes detected in gray and list the estimated detection limits in parentheses for analytes which were not detected.

The data are reported as quantitation reports, chromatograms, interim reports, and spectra of detected target analytes and TICs. The quantitation report header lists the TLI project number, analysis method, instrument sample file name, and client sample name. The client project number, TLI sample number, calibration file, dilution factor, and date received, extracted, and analyzed are



TRIANGLE LABORATORIES, INC. CASE NARRATIVE

also listed in the quantitation report header. The response factors used for all calculations are from the continuing calibration listed in the header. All initial and continuing calibration data are located in the back of the data package. The amount reported for each target analyte detected in the samples is reported in total ug. The retention time (RT) will be listed for all internal standards and analytes which are detected. If a target analyte is not detected, it will be flagged with a "U" and a detection limit will be listed. Estimated detection limits are calculated using an area of 10,000 for all analytes which were not found in the samples. The estimated detection limits reported are the average detection limits achievable over time on an instrument type. The actual detection limit for a given compound on a given day may vary from the estimate reported. The quantitation limit for all analytes is half of the low point of the initial calibration adjusted for dilution when appropriate. Below this point the calibration cannot be considered to be linear. Any amounts reported at a level below the quantitation limit will be flagged with a "J" and should be considered estimated. If a target analyte is found at a level exceeding the upper calibration limit, it will be flagged with an "E" and should also be considered estimated. Any analytes flagged with a "B" on the sample topsheets were detected in the associated laboratory blank. All target analytes are quantitated against the internal standard preceding them on the target analyte list.

In addition to the quantitation report, a tentatively identified compound report is also present. The TIC report includes the name, retention time, area, internal standard retention time and area, and the amount in total ug. The TIC amounts should be considered estimates because they are calculated using the total ion current areas of the internal standard. These TICs were searched against the NBS library and the best three matches were obtained. From this information a tentative identification was assigned. All of the spectral searches are included in the data package behind the spectra of target analytes.

Immediately following the TIC report are two pages which comprise the total ion chromatograms. Labeled internal and surrogate standards present in the sample have their identifications and retention time printed above their peak on the chromatogram. The chromatogram is followed by the interim report. On the interim report a \$ is indicative of a surrogate standard and a * represents an internal standard. The interim report from the instrument is followed by the target spectra of detected compounds. Four spectral plots are included for each compound: a raw spectrum of the peak, a background subtracted version of the same spectrum, a library spectrum of the compound, and a plot showing the percent difference between the library spectrum and the background subtracted spectrum. Extracted ion current profiles are plotted on the right-hand side of the page showing the quantitation mass and one or two other prominent ions known to be present in target compound as they appear in the sample peak.

Results:

The extracts were analyzed within the Method 8270 holding times.

Please note that while Method 8270 Table 2 lists bis(2-chloroisopropyl)ether, this compound is not listed on the quantitation reports. The reports list 2,2'-oxybis(1-chloropropane) which is a structural isomer. These compounds coelute and are considered equivalent. Please note that the target analyte n-nitrosodiphenylamine cannot be distinguished from diphenylamine.

TRIANGLE LABORATORIES , INC. CASE NARRATIVE

These dioxin extracts were reanalyzed per client request for Method 8270 Table 2 compounds. The dilution factors of two result from the dioxin extract split. It is important to note that Method 8270 nor 8270A do not specifically address air matrices. Likewise, the analytical columns used in semivolatile GC/MS are extremely sensitive to the compound toluene, which is present in dioxin extracts. The toluene peak can be seen in the sample chromatograms at approximately 4.5 minutes. Toluene may not be the solvent of choice for optimum semivolatile analyte extractions and therefore recoveries.

These samples were originally extracted for the dioxin analysis only, therefore no semivolatile surrogate standards were spiked onto these samples prior to extraction. There is no measurement for extraction efficiency as a result.

The internal standard areas for chrysene- d_{12} and perylene- d_{12} were above Method 8270 quality control limits in all samples except COE-HG-AFOUT-M23-R1. The internal standard area for perylene- d_{12} was above Method 8270 criteria in sample COE-HG-AFOUT-M23-R1. These internal standards are flagged with "IS High" and the amounts quantitated against them should be considered estimated.

Please note that one milliliter of toluene was used as the method blank because the archived portion of the laboratory blank extracted along side the samples had been used. An arbitrary dilution factor of two has been applied to this blank for the purposes of consistency. This blank renders no information in regards to the extraction process nor laboratory contamination potential at the actual time of the original extraction. No target analytes were detected in this blank.

The target analyte benzyl alcohol was found at amounts above the upper calibration limit of 320 micrograms. Per client request dilutions were not performed for this analyte.

The majority of TICs found in these samples were various aromatic compounds.

Sample Calculations:

Response Factor, RF =

Area analyte x Amt Is

Area IS x Amt analyte

Amount ug =

Area analyte x Amt IS x DF

Area IS x RF

TIC Amount ug =

Total Ion Current Area analyte x Amt IS x DF

Total Ion Current Area IS

TRIANGLE LABORATORIES, INC. CASE NARRATIVE

Where:

Amt IS = amount of internal standard = 40 ug Amt analyte in the ccal = amount of analyte in the continuing calibration = 50 ug DF = dilution factor

The data reported has been judged to be valid and in compliance with the guidelines of Method 8270A Rev. 1 (7/92) except as noted above. Should you have any questions about this project, please feel free to contact our Project Scientist, Selena Armistead, at (919) 544-5729 Ext. 269.

For Triangle Laboratories, Inc.,

Report Preparation:

Quality Control:

Report Preparation Chemist

Amy Wall

Report Preparation Chemist

Penny A. Brock

The total number of pages in this data package is ________.

Triangle Laboratories of RTP Sample Identification Index for Project: 36062A

Client Id:	TEI Id:	File Name:
COE-HG-AFTOUT-M23-R1	113-204-1A-E	YL525
COE-HG-AFTOUT-M23-R2	113-217-1A-E	YL526
COE-HG-AFTOUT-M23-BT	113-217-3A-E SBLK 020896	YL527 YL523
SBLK 020896	3DLR 020090	1 = 0 = 0

Triangle Laboratories of RTP Project Summary for Project 36062A

		•			
Client ID:	COE-HG-AFT	COE-HG-AFT	COE-HG-AFT	SBLK 02089	
	OUT-M23-R1	OUT-M23-R2	OUT-M23-BT	6	
Filename :	YL525	YL526	YL527	YL523	
TLI Id:	113-204-1A-E	113-217-1A-E	113-217-3A-E	SBLK 020896	
Matrix :	M23	M23	M23	TOLUENE	
Units :	ug	ug	ug	ug	
Dhonol	4.36	8.01	9:08	(2.87)	
Phenol bis(2-Chloroethyl)ether	(4.00)	(3.81)	(3.72)	(3.42)	
•	(2.40)	(2.29)	(2.24)	(2.06)	
2-Chlorophenol	(2.04)	(1.94)	(1.90)	(1.75)	
1,3-Dichlorobenzene	(1.95)	(1.86)	(1.81)	(1.67)	
1,4-Dichlorobenzene 1,2-Dichlorobenzene	(2.09)	(1.99)	(1.95)	(1.79)	
	378.52	1521.61	2515.21	(6.51)	
Benzyl alcohol		(3.92)	(3.83)	(3.52)	
2,2'-oxybis(1-Chloropropane	(3.82)	(3.64)	(3.56)	(3.28)	
2-Methylphenol	(3.76)	(3.59)	(3.50)	(3.23)	
3/4-Methylphenol		(4.82)	(4.70)	(4.33)	
N-Nitroso-di-n-propylamine	(4.09)	(3.89)	(3.80)	(3.50)	
Hexachloroethane	(2.53)	(2.52)	(2.63)	(2.26)	
Nitrobenzene	(1.42)	(1.42)	(1.48)	(1.27)	
Isophorone	(3.70)	(3.68)	(3.84)	(3.30)	
2-Nitrophenol	(3.12)	(3.10)	(3.24)	(2.78)	
2,4-Dimethylphenol		(3.14)	(3.28)	(2.82)	
bis(2-Chloroethoxy)methane	50.02	66.93	48.28	(3.72)	
Benzoic acid	(2.66)	(2.64)	(2.76)	(2.37)	
2,4-Dichlorophenol	(2.16)	(2.15)	(2.24)	(1.93)	
1,2,4-Trichlorobenzene	1.34	1.63	1.64	(0.76)	
Naphthalene	(2.05)	(2.04)	(2.13)	(1.83)	
4-Chloroaniline	(2.60)	(2.59)	(2.70)	(2.32)	
Hexachlorobutadiene	(3.25)	(3.23)	(3.38)	(2.90)	
4-Chloro-3-methylphenol	(1.26)	(1.25)	(1.31)	(1.13)	
2-Methylnaphthalene	(2.34)	(2.30)	(2.35)	(2.12)	
Hexachlorocyclopentadiene	(2.94) (2.92)	(2.87)	(2.93)	(2.65)	
2,4,6-Trichlorophenol	(2.82)	(2.78)	(2.83)	(2.55)	
2,4,5-Trichlorophenol	(2.82)	(1.15)	(1.17)	(1.06)	
2-Chloronaphthalene	(4.32)	(4.25)	(4.33)	(3.91)	
2-Nitroaniline		(0.95)	(0.96)	(0.87)	
Dimethylphthalate	(0.96)	(4.07)	(4.14)	(3.74)	
2,6-Dinitrotoluene	(4.13)			(2.44)	
2,4-Dinitrotoluene	(2.69)	(2.65)	(2.70)		
Acenaphthylene	(0.75)	. (0.74)	(0.75)	(0.68)	
3-Nitroaniline	(3.76)	(3.69)	(3.76)	(3.40)	

()-Estimated Detection Limit

Page 1

Phone: (919) 544-5729 • Fax: (919) 544-5491

Printed: 17:26:49 03/20/96

Triangle Laboratories of RTP Project Summary for Project 36062A

	Proj	ect Summary for 1	10,0000=-		
CII and ID:	COE-HG-AFT	COE-HG-AFT	COE-HG-AFT	SBLK 02089	
Client ID:	OUT-M23-R1	OUT-M23-R2	OUT-M23-BT	6	
	001 11120 212				
F11	YL525	YL526	YL527	YL523	
Filename:	113-204-1A-E	113-217-1A-E	113-217-3A-E	SBLK 020896	
TLIId:	M23	M23	M23	TOLUENE	
Matrix : Units :	ug	ug	ug	ug	
Offics .			(1.24)	(1.21)	
Acenaphthene	(1.34)	(1.32)	(1.34) (8.55)	(7.72)	
2,4-Dinitrophenol	(8.53)	(8.39)	<u>.</u>	(3.67)	
4-Nitrophenol	(4.05)	(3.99)	(4.06)	(0.71)	
Dibenzofuran	(0.78)	(0.77)	(0.78)	(0.67)	
Diethylphthalate	7.80	3.61	1.29	(1.68)	
4-Chlorophenyl-phenylether		(1.83)	(1.86)	(0.92)	
Fluorene	(1.02)	(1.00)	(1.02)	(3.33)	
4-Nitroaniline	(3.68)	(3.62)	(3.68)	(4.77)	
4,6-Dinitro-2-methylphenol	(4.65)	(4.44)	(4.56)	, ,	
N-Nitrosodiphenylamine	(1.50)	(1.43)	(1.47)	(1.53)	
4-Bromophenyl-phenylether	r (2.15)	(2.06)	(2.11)	(2.21)	
Hexachlorobenzene	(1.54)	(1.47)	(1.51)	(1.58)	
Pentachlorophenol	(2.69)	(2.57)	(2.64)	(2.76)	
Phenanthrene	(0.59)	(0.56)	(0.58)	(0.60)	
Anthracene	0,35	(0.57)	(0.58)	(0.61)	
Di-n-butylphthalate	21.48	15.26	8.30	(0.35)	
Fluoranthene	(0.45)	(0.43)	(0.44)	(0.46)	
Pyrene	(0.33)	(0.30)	(0.30)	(0.32)	
Butylbenzylphthalate	0.39	(0.53)	(0.52)	(0.57)	
3,3'-Dichlorobenzidine	(0.94)	(0.85)	(0.84)	(0.92)	
bis(2-Ethylhexyl)phthalate	16.27	18.01	4.49	(0.42)	
Benzo(a)anthracene	(0.35)	(0.32)	(0.31)	(0.34)	
Chrysene	(0.38)	(0.34)	(0.34)	(0.37)	
Di-n-octylphthalate	(0.25)	(0.28)	(0.31)	(0.24)	
Benzo(b)fluoranthene	(0.34)	(0.39)	(0.42)	(0.33)	
Benzo(k)fluoranthene	(0.35)	(0.40)	(0.43)	(0.34)	
Benzo(a)pyrene	(0.35)	(0.40)	(0.43)	(0.34)	
Indeno(1,2,3-cd)pyrene	(0.36)	(0.40)	(0.44)	(0.35)	
Dibenz(a,h)anthracene	(0.48)	(0.53)	(0.58)	(0.46)	
Benzo(g,h,i)perylene	(0.42)	(0.47)	(0.51)	(0.40)	
(O) () I					

()-Estimated Detection Limit

Page 2

381-596a 3) Present on Sample 2) Unbroken on Outer COC Record Present Package Y or N Sample Y or N Package Y or N Upon Sample Rec't Y or N COC Tape was: 1) Present on Outer 4) Unbroken on 5 **WESTON Analytics Use Only** BLAN 9 Page Condition Y or N 2) Ambient or Chilled 3) Received in Good z ŏ ≻ Properly Preserved 5) Received Within 4) Labels Indicate ŏ Hand Delivered Samples were: Holding Times Cooler# 1) Shipped **WESTON Analytics Use Only** Airbill # PCDF -СИ INORG Metal $\frac{\rho_{CDD}}{\rho_{CDD}}$ Custody Transfer Record/Lab Work Request z Discrepancies Between Samples Labels and COC Record? Y or NOTES: Ref# 100 Mal L378 EXS 1 фэн PCB Pest ORGANIC Time 919 L377 AN8 Date AOV ----Date Time Collected Collected Liquid Liquid L375 Received #/Type Container ð DATE/REVISIONS: //C/I ANALYSES REQUESTED Preservatives Volume Matrix L373 Relinquished by **MA** 一条カ OC Chosen MSD 18P1 (057-107-01) S COF-H6-01-M23-5B-AUE All Project Manager Se IOpes Hyrmistend L372 アード6・01-123-20-17 000/-DE116. APTON-MO3- PL CDE-A6-AFPUT -M23-R CAE-196-001-M23-SB OF HEAPTOUT-MUZ-R 116-ATOTO-M27-K ある。日本のアーアスラーと DE- HG-ON-M23-SB-Time FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS Client ID/Description 6.214h Project Contact/Phong # JEH O'Well Est. Final Proj. Sampling Date OLL -OLD Date Date Due Somo OM COS ISO Received by WESTON Analytics Use Only 201 FD2 Special instructions: **₽** く 3 4 RFW 21-21-001/A-7/91 Relinquished by as STD EP/TCLP ノくつ Leachate Dile Rec'd Account # A. Air 08 · Drum Solids OL . Drum īg Ø Fish SO - Solid ₹×. ئ

E

Custody Transfer Record/Lab Work Request

WESTON Analytics Use Only

Est. Final Proj. Sampling

Project Contact/Phone #

Work Order #

AD Project Manager —

Del

Date Rec'd __ Account # __ Lab Co

MATRIX
CODES:
S. Soil
SE. Sediment
SO. Soil
SL. Sludge
W. Water
O. Oil
A. Oil
DS. Drum
Liquids
Liquids
Liquids
Leptrol P
Leachate
W. Wipe
X. Other
F. Fish

Pate Liquid Pate Pat			Refrigerator #	tor #												
Volume Solid Preservatives Preservatives Solid Preservatives Preservativ	2010			a de la de	Liquid					_		-	_			
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	;				,				Samples were:	COC Tape was:
					j .				1) Shipped or Hand Delivered	1) Present on Outer Package Y or N
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					- 6.				Property Preserved	4) Unbroken on
Relinquished	Received	Date	Time	Relinquished by	Received by	Date	Time	Discrepancies Between Samples Labels and	Y Or N 5) Received Within	COC Record Present
								COC Record? Y or N NOTES:	Holding Times	Opoli Sample nect
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		-				Refr	Refrigerator #										
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Date Rec'd		Date Due	ne -			A BE	ANALYSES REQUESTED .		AOV	AN8 \tesq	Pest/ PCB Herb			C/A Wetsl			
XICTOR							L	_			-	WEST	ON Analy	WESTON Analytics Use Only	Only		
CODES: S- Soil SE-Sediment SO-Soild	Lab D	Cilent ID	Client ID/Description	u _o	Matrix QC Chosen (<)	Matrix		Date Time Collected Collected	pe								
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Special Instructions:	lons:						-							5	/ESTON Ana	WESTON Analytics Use Only	- 1
							3. 6. 4.							Samples we 1) Shipped Hand Delive Airbill #	Samples were: 1) Shipped or Hand Delivered Arbill #	COC Tape w 1) Present or Package Y 2) Unbroken	as: on or us
							16 10 							3) Rec Condii	3) Received in Good Condition Y or N 4) Labels Indicate	3) Present or Y	o Sa
Relinquished	Re	/ed	Date	Time	Relinqui	nquished	Received	ved	Date	Time	<u> </u>	Discrepancies Between	Between	Prope	Properly Preserved Y or N	Sample Y COC Record I	or N Presen
		A A									8 S S	Samples Labels and COC Record? Your NOTES:	Sand ≺ or N	5) Rec Holdir	5) Received Within Holding Times Y or N	Upon Sample Rec't Y or N	o Re
DEM 21 21 001/A 7/01	70,2		1	1372		1373		L375		1377]]	L378 R	Ref#		Cooler#		381-596a

Custody Seal : Absent Chain of Custody : Present		Samol	ie Seals	s: Abs			Project Number	T		Weston Inc		+ 113
Sample Tags : Present Sample Tag Numbers: Listed							ent: RFWUI e Received					
SMO Forms : N/A						4 -	rier and Numb	+		+	C) NELL	204
Вох	[CE 						L+		+		To 148	
I Number Matrix R/H:CPM Client ID Location	! To LAB ! Date/I	nit	! To ST ! Date/ +	ORAGE! Init	To LA Date/ 	8 Init 	! To STORAGE! ! Date/Init !	Dat	e/Init :	Date/Init	Date/Init	Date/Init
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13-204-1D BH/RINSE	;		!		!						 	} }
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.13-204-2C ACE/MECL2	-+		-+		 		!	1		' ! !	! !	
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13-204-2D TOLUENE	-+		+	·	+ }		!	! !		1 1	, 	
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	 		-+ ¦		; ;		-	† ¦			1	
Receiving Remarks: Samples rece	-+ ived 2/2	 /96.	-+ logged	in 2/	+ 4/96.		-+	+			T	· ,
Archive Remarks:							F CUSTODYRE					

PAGE 1 OF 2 Sample Seals: Present ! TLI Project Number ! 36062 - Rook ! Custody Seal Chain of Custody : Present ! Roy F. Weston. Inc. 113 Sample Tags : Present Sample Tag Numbers: Listed SMO Forms Ice Chest ! TO STORAGE! TO LAB ! TO STORAGE! TO LAB Matrix ! To LAB ! To STORAGE! To LAB TLI Number mR/H:CPM CFient ID Location | Date/Init | COE-HG-AFTOUT-M23-R2-COE-HG-AFTOUT-M23-R2-CO1 ! 113-217-1C COE-HG-AFTOUT-M23-R2- +-C01 ! - BH/RINSE : 113-217-1D COE-HG-AFTOUT-M23-R2- +--113-217-1E TOLUENE ! COE-HG-AFTOUT-M23-R2- + 113-217-2A COE-HG-AFTOUT-M23-R3-C01 : COE-HG-AFTOUT-M23-R3-CO1 ! 113-217-2C FH/RINSE ! COE-HG-AFTOUT-M23-R3-C01 : BH/RINSE ! 113-217-2D COE-HG-AFTOUT-M23-R3- +---TOLUENE ! 113-217-2E COE-HG-AFTOUT-M23-R3- +-Receiving Remarks:

-----TRIANGLE LABORATORIES, INC.--CHAIN OF CUSTODY--REVISED 02/17/95----

Custody Seal : Prese Chain of Custody : Prese	ent	et S	amol	e Sea	ls: Pre		+	Project Numb ent: RFW01	+		Weston Inc		Book 113
Sample Tags : Prese Sample Tag Numbers: Liste SMO Forms : N/A							+	ent: Krwot e Received			6 8y G		
Ice Chest		ICE			eno 4	.0 C	† † Car	rier and Numb	·			/	217
LI Number R/H:CPM Client ID Lo	Matrix ocation	To LAB	nit ¦	To S Date	TORAGE /Init	To LA Date/	B Init	To STORAGE! Date/Init	To Dat	LAB e/Init	To STORAGE Date/Init	To LAB Date/Init	To STORAGE Date/Init
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 13-217-3C FI	H/RINSE	+				} }		 				; 	
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Receiving Remarks:		·+		+·		+		+	+		+	+	

Triangle Laboratories, Inc.
TLI PROJECT# 02518
DATE 1/19/96 TLI BLANK
SPIKE Ong USF-C & USF-S
SPIKER
PREPARER G.L.
WESTON

1) XAD-clean (1Fi Her-cream 19/Assword-clean

RFW01-Roy F. Weston. Inc.
COE-HG-AFTOUT-M23-RI-XAD
Project:36049
113-204-16

RFW01-Roy F. Weston. Inc. COE-HG-AFTOUT-M23-R1-FILT Project:36049

Client COF - HOT GAS

Plant ALPINE, AL

Sourc AFTERBURINER OUTL T

Date PCDF

Sample Method METHOD - PCDF

2) HAD-cledy IFilter-Chean 19/ASSwed-clean

RFW01-Roy F. Weston, Inc. COE-HG-AFTOUT-M23-R2-Project:36062 113-217-18

RFW01-Roy F. Weston, Inc. COE-HG-AFTOUT-M23-R2-Project:36062 113-217-1A

Triangle Land Tories, Inc.
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This projects of the USE-S
This priker Canal
PREPARER G.L.
PREPARER WESTON

RFW01-Roy F. Weston, Inc. COE-HG-AFTOUT-M23-R3-Project:36062 113-217-28

RFW01-Roy F. Weston, Inc.
COE-HG-AFTOUT-M23-RGProject:36062
113-217-2A

Triangle Laboratories, Inc.
TLI PROJECT# 02518

DATE 1/19/96
SPIKE Ong USF-C & USF-S
SPIKER AND
PREPARE G.L.

VESTON

H) XXX -clean, 1Filter-dean, glasswood-clean

RFW01-Roy F. Weston, Inc.
COE-HG-AFTOUT-M23-BTProject:36062
113-217-3B

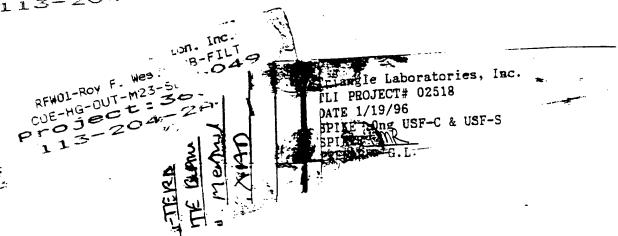
RFW01-Roy F. Weston, Inc.
COE-HG-AFTOUT-M23-BTProject:3606
113-217-34

Triangle Laboratories, Inc.
TLI PROJECT# 02518

DATE 1/19/96
SPIKE .Ong USF-C & USF-S
SPIKER
PREPARER G.L.
WESTON

3 IF Her clean, YAO-clean glasswood-clean

FUOI-ROV F. Weston, Inc. POE-HG-OUT-M23-SB-XAD POJECT: 35049 F113-204-28



16

PRDPERC v3.17 Page: 1

Date: 02/10/96 Time: 18:31

TRIANGLE LARORATORIES, INC. Wet Lab MMS/PUF Observations Project: 36062

Filter Glass Wool PUF Air Color.... Color.... Color.... Color.... Color.... Color.... Color.... Salar 02/08 01:19 F 02518 mercer 02518 mercer 02518 mercer 02518 mercer 02518 mercer 02518 mercer clean clean clean clean clean clean cream clean сгеаш стеаш Color .. clean clean clean clean clean clean F. XAD
No Color # crd TLI_Number.. Customer.Sample.Id..... 113-217-2A-E COE-HG-AFTOUT-M23-R3 113-204-1A-E COE-HG-AFTOUT-M23-R1 113-217-1A-E COE-HG-AFTOUT-M23-R2 113-217-3A-E COE-HG-AFTOUT-M23-BT 113-204-2A-D COE-HG-OUT-M23-SB TLI M23 Blank TLI Blank Sample 000 900 100 002 003 004

*** End of Report ***

 :		TRIAN		TORIES, INC. tion Tracking Clic	& Management ent: Roy F. We	Form eston, Inc. (F	PAGE 1	OF 1
Sample Extrac	et: 36062 : Information: :tion Date: <u>Q/D</u> /196 :ike: 40 μl, conc: 0.100 ng/μl		king Dates:	2107196 Sbm		'	3: T-0, Tolueno	
 	TLI / SAMPLE / CLIENT ID / SAMPLE ID	GROSS WEIGHT Before After			usf — A Ex/El Initials 40 M	MISC Ex/Cl Initials	USFMX Extr. Initials	Sample Left ? Yes/No
000	TLI Blank TLI M23 Blank			MOO	100			1/2
001	113-204-1A-E COE-HG-AFTOUT-M23-R1				I NOD			1/2
002	113-217-1A-E COE-HG-AFTOUT-M23-R2			MAX	I APP			1/2
003	113-217-2A-E COE-HG-AFTOUT-M23-R3			MEX				K
 	113-217-3A-E COE-HG-AFTOUT-M23-BT			MPX	I INDIP		· 	1/2
005	113-204-2A-D COE-HG-OUT-M23-SB			Kiss	1 (bb			1/2
				ή'	' 			
					 	 -+	 +	 +
					 +	 		
					 	 -		
Gross	weight of sample container + si Extract and HoLD	ample before/after	aliquot rem	of the		fication Solu	tions:	Annii
COMMEN	ITS:			USF-1: USF-AC USF-C:			F-A: <u>3 496</u> O(129 F-MX:	Hal
		Initial/Date <u>SAjr</u>	2101	7.96 LOT #	(Solvents):	Taluenz	950743	
	ALS OF BOTH THE SPIKER AND OBSE X = Gross Weight not provided f	RVER MUST BE ENTERE		+	traction:			

TRIANGLE LABORATORIES, INC. SAMPLE EXTRACTION and CLEANUP TRACKING FORM TLI Project: 36062

CHROMATOGRAPHIC CLEANUP EXTRACTION= | Escltd | Acid | Flor- | Carbon | Trans- | Add'l Spike Extr. Spike Acid Big Ext S#.crd Silica Almina isil Column fer Clean-Base Fish after before and up Gel 6 gm Extr. $\texttt{Extr.} \mathcal{V}$ TLI Number 2/10/96 000 TLI Blank 001 113-204-1A-E 002 113-217-1A-E 003 113-217-2A-E 004 113-217-3A-E 005 113-204-2A-D ...PROCEDURE.... DETAILS..... Performed.By Observed.By Spike Soxhelet Ext. Rotovap 40mL, 10mL, Dryness Combine Qivid 50:50 Solvent Exchange Add Tridecane Comments

19

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SAMPLE PREPARATION LABORATORY SAMPLE EXTRACTION AND CLEANUP TRACKING FORM ORGANIC WET LABORATORY

TL-RTP Project Number: 36062A

Sample No.	. Step Number and Decsription	Initial	Date	Tim∈
	blank (archived partian) was used a lready,	Spm	3/6/14	
	clear Tolling was used as the blank			-
	only one milliter of toluene was used for blank			
1-3	No to long Tolurne to Im		·	•
	Transfer to Indiam val			
-1-3	N7 70 122	MK	3/7/96	
A /	Reling to MS	MK	3/7/9C	
	Age of the first o			
-				
	Programme of the second			
				1
<u></u>				1
			:	
			.2v-5	

Water	Bath Temperature:			
Total	Hours:	• • • • • • • • • • • • • • • • • • • •	ı	

comments: # plank - clean tolure only

TRIANGLE LABORATORIES, INC. Transfer Chain-of-Custody Form Project 36062-A

Transfer From: OWLS5

To: OMSSV

Initials.. Date..... Time...

Released by: MK = 3/07/96 = 1:00 PM

Accepted by: 00 3/1/90 13.00

MILES.ID..... TLI_No..... Cust.Id.....

36062-A -000 TLI Blank TLI M23 Blank

36062-A -001 113-204-1A-E COE-HG-AFTOUT-M23-R1 36062-A -002 113-217-1A-E COE-HG-AFTOUT-M23-R2

36062-A -002 113-217-1A-E COE-HG-AFTOUT-M23-R2 36062-A -003 113-217-3A-E COE-HG-AFTOUT-M23-BT

.....XfrCOC (Rev 11/01/94)--+

Additional comments or instructions:

SEMIVOLATILE GC/MS TRACKING FORM

TL-RTP P	roject #: <u>3</u>	2042 P	\		
MATRIX:	MM5, PUF	Water	Soil	Other	

METHOD: 8270 625 CLP

ANALYTE LIST: Table 2) TCLP 625 CLP CAA/PAP PAH CB/CP Other _____

ICAL Name: ICAL 4304

Date	Time	TLRTPID	Sample ID	File Name	Comments
3/8/94	0808	2847	DFTPP	11515	
770	1103	3345	SSTD050	Y L 548	
/	1203	_	35UL 02089U	YL519	15 si li high
	1454		SPUL 020894	41.523	is so unigh
	1621	113.20-12世	COL HG-AFTOUT MIE-FL	YL525	is is high
	i 106	113-217-1A-E	305-46-AFTONT-NES-82	YL 52U	155 lu high
رَبُ	1747	1131217341	COE HG-PETOUT-M23 BT	YL527	15 sele high
, in the second		·			
`					

TRIANGLE LABORATORIES OF RTP, INC.

TRIANGLE LABORATORIES OF RTP, INC.

RUN LOG

#5		COLUMN TYPE	# COLUMN #	MN # ANALYSIS	ACQ METHOD	GC METHOD	тнор	FIND	FIND DB'S	ОТНЕВ
17	DP	DBS-435	3515023	5	clsf.m			- -		
†			TRACT / SAM	EXTRACT / SAMPLE VOLUME 100				2.		
#	TIME	PROJECT#	SAMPLE#	CLIENT SAMPLE ID	FILENAME O	OPER BACKUP	ပ	рвос рн		COMMENTS
2000	72.12	1	2867	DEMP	16460	ll lo		K1¢0	passid	d
200			3365	55TDC 5 0	YL401 D	20		S.	f. 64	The bolt of
<u>}_</u>	S:4	l	3365	SPROS	4646	8		- अ _{ग्र}	chored of column	of column- Filed . Van ICAL
7,24	وريء	(3800	०१/७५९	1463 11	No		9		
***	6).61		3363	ςςτριδο	Yede4 K	Kles	·	9		
ng 2	5	(3364	of other	1465 4	No		8		
29.00		(3366		10466	Ke		Qa		
44	1761	36400	(o 58ck 0 30196	£9177~	Mo		8		
494			115-55-11	1 0228-CVI	YLYCB NOW	As		00	\	المامة المامة
24		ઉપ્લેપડ	J-17-661-101	outlet sale land	19469	Mes		00	ماره	ो। विषय
			INTERN	INTERNAL STANDARD SURF	SURROGATE STANDARD		ANALYTE STANDARD	ANDARD	F	
WGE		33	3397c 54	17c etp 6/13/16 5u(cx 834 expu)				-	`	

	RUN LOG
~~	TRIANGLE LABORATORIES OF RTP, INC.

			-		۵	0%0	•					ગા <u>ં</u> ગાંધ	3 6 9 E		
ОТНЕВ			COMMENTS	ental 3th column	falled purry alcoholosy, b	1 1/2 of column - bury alcoholis	Vent off 2 Hi column	15 5-4 Nigh			an-build philhalate & 172ng paryer had & 113ng.	γ - βε (Δ	Q6 24		
FIND DB'S			Hd	cut of	falle	ent of	Pag.	15 5			P. P. C.				
H.	<u></u> '	2.	PROC	2	W	0.0	26	90	aw	a.	Qu			ANDARD	
ас метнор			BACKUP NET ARC											ANALYTE STANDARD	
			OPER	æ	CIO	OO.	CK	92	CVA.	æ	83	Q	200	PD PD	
ACQ METHOD	ection.m	TEL (JI) MT	FILENAME	YES	9151/	71517	8157	6157/	1,520	1757	11217	41523	45574	SURROGATE STANDARD	
ANALYSIS			CLIENT SAMPLE ID	OKTOP	5510050	SSTOOSO	5510050	0,50846	76 o 3049C	1)6060	151050	al-21=mms-burdl	19-52M-Therams-121		nblan
# N	25	ان PLE VOL	CLIEN		551	SSTR	\$	mos	ne soul	SPALK	SERVE	3 96-2	100-110	INTERNAL STANDARD	1 drs 128.
# COLUMN #	7,4515025	EXTRACT / SAMPLE VOLUME	SAMPLE #	1282	3365	3365	3365	١	الح اللا مع	1	١	4歳でご		INTERN	upper the appear
COLUMN TYPE	185-625		PROJECT #	\	١	1	١	30002A	363174	3431915	34376B	34376	3000ZN		39
	75		TIME	0808		\$51 ₂ 0	1103	5061		1324	<u> </u>				
#81	7	t	E E	2000	200	30	2000	200 B	3	75/2	-202		<u> </u>		9 -

TRIANGLE LABORATORIES OF RTP, INC.

RUN LOG

#S	-	COLUMN TYPE	# COLUMN #	# NM	ANALYSIS	Аса метнор		GC METHOD	ā	FIND	FIND DB'S	OTHER	مجسور
1	<u> </u>	0855125	3515033	23		celist.m				1.			
 		Į.	EXTRACT / SAMPLE VOLUME	APLE VOLU		OU(U) mL				2.			
H	TIME	PROJECT # S	SAMPLE#	CLIENI	CLIENT SAMPLE ID	FILENAME	OPER	BACKUP NET AR	ပ	PROC pH		COMMENTS	-
1400	11/24	340 b2A	,	1000 A	abano anak	25 YE 33	8		1	CVA	npinnies si	u hiqh	
Sec.		3037hB	115.31.34.6	90 -21=mms	go - 27 = MMS BURNIK TERHN	45524	Q)		S	0		,	
300	1621	36062A	13.204.19元	106-Marak	ios-Ha-Betout-mis-K	1,525	00			%			van de service de serv
26/23	1	34062A		te on slefte	ہ	17571	QJ			9	·		
200	1747	3400LR	13.71.3kE	1015-14G-175	松	1, 00 Milau 1,527	2			0,0			
عما		31878	FF 000 314 (5)	50 PS-07) .	8151k	8			OU	Miluder Aprel	minded 5x) (entagactory) fined of=10x phunolabove cal rat	ye call rat
marin			115.31118.4	918-27= MMS- BULN#1	- BUN# 1	h757/	B			0A	phyte	princted 5K	
July 42	<u> </u>	363700	4	Ī	96-27= MMS- EUN#2	1,530	96			Clan	Mutch 5K	A 5K	
20/0	_!	36346	1,422,411	1	1-NN-1	16511	00			QL/1	muded 10x	d 10x of une	
MOZ		34319F	114.224.2	30%	30% B-NY-2	1637	QQ.			Q	Much	Muded 10x	
			INTERN	INTERNAL STANDARD		SURROGATE STANDARD	RD	ANALY	ANALYTE STANDARD	NDARD	1		
9	,,,	41	3317 D EX	min peso	41,					-	`		
*	1	3.4-1-4-6		ı							ł		

Project Number: 36062A Sample File: YL525

Method 8270A M23 Sample ID: COE-HG-AFTOUT-M23-R1

Client Project: COE HOT GAS PRG

Date Received: 02/02/96 Date Extracted: 02/07/96 Response File: YL518

TLI ID: 113-204-1A-E

Date Analyzed: 03/08/96

Dilution Factor:

2.00

Analyte	Amount	FLAG	RT	Det. Limit	Quan. Limit
	ug			ug	ug
1,4-Dichlorobenzene-d		IS 1	9.09		
Phenol	4.36	J	8.46		20
bis(2-Chloroethyl)ether		U		4.00	20
2-Chlorophenol		U		2.40	20
1,3-Dichlorobenzene		U		2.04	20
1,4-Dichlorobenzene		U		1.95	20
1,2-Dichlorobenzene		U		2.09	20
2,2'-oxybis(1-Chloropropane)	•	U		4.11	20
Benzyl alcohol	378.52	E	9.37		20
2-Methylphenol		U		3.82	20
3/4-Methylphenol		U	•	3.76	20
N-Nitroso-di-n-propylamine		U		5.05	20
Hexachloroethane		U		4.09	20
Naphthalene-d	4	IS 2	11.56		
Nitrobenzene		U		2.53	20
Isophorone		U		1.42	20
2-Nitrophenol		U		3.70	20
2,4-Dimethylphenol		U		3.12	20
bis(2-Chloroethoxy)methane		U		3.16	20
Benzoic acid	50.02		11.07		50
2,4-Dichlorophenol		U		2.66	20
1,2,4-Trichlorobenzene		U		2.16	20
Naphthalene	1.34	J	11.61		20
4-Chloroaniline		U		2.05	20
Hexachlorobutadiene		U		2.60	20
4-Chloro-3-methylphenol		U		3.25	20

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

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Project Number: 36062A Sample File: YL525 Method 8270A M23 Sample ID: COE-HG-AFTOUT-M23-R1

Response File: YL518

Client Project: COE HOT GAS PRG TLI ID: 113-204-1A-E Date Received: 02/02/96 Date Extracted: 02/07/96

Date Extracted: 02/07/96

Date Analyzed: 03/08/96

Dilution Factor:

2.00

Analyte	Amount	FLAG	RT	Det Limit	Quan. Limit
ĺ	ug			ug	ug
2-Methylnaphthalene		U		1.26	20
Acenaphthene-d ₁₀		IS 3	15.16		
Hexachlorocyclopentadiene		U		2.34	20
2,4,6-Trichlorophenol		U		2.92	20
2,4,5-Trichlorophenol		U		2.82	20
2-Chloronaphthalene		U		1.17	20
2-Nitroaniline		U		4.32	50
Dimethylphthalate		U		0.96	20
2,6-Dinitrotoluene		U		4.13	20
2,4-Dinitrotoluene	*	U		2.69	. 20
Acenaphthylene		U		0.75	20
3-Nitroaniline		U		3.76	50
Acenaphthene		U		1.34	20
2,4-Dinitrophenol		U		8.53	50
4-Nitrophenol		U		4.05	50
Dibenzofuran		U		0.78	20
Diethylphthalate	7.80	J	16.12		20
4-Chlorophenyl-phenylether		U		1.86	20
Fluorene		U		1.02	20
4-Nitroaniline		U		3.68	50
Phenanthrene-d		IS 4	18.21		
4,6-Dinitro-2-methylphenol		U		4.65	50
N-Nitrosodiphenylamine		U		1.50	20
4-Bromophenyl-phenylether		U		2.15	20
Hexachlorobenzene		U		1.54	20
Pentachlorophenol		U		2.69	50

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IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

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Printed: 17:25 03/20/1996

Project Number: 36062A Sample File: YL525 Method 8270A M23 Sample ID: COE-HG-AFTOUT-M23-R1

Response File: YL518

Client Project: COE HOT GAS PRG

TLI ID: 113-204-1A-E

Date Received: 02/02/96 Date Extracted: 02/07/96

Date Extracted: 02/07/96

Date Analyzed: 03/08/96

Dilution Factor:

2.00

Analyte	Amount	FLAG	RT	Det Limit	Quan. Limit
	ug			ug	ug
Phenanthrene		U		0.59	20
Anthracene	0.35	J	18.26		20
Di-n-butylphthalate	21.48		19.53		20
Fluoranthene		U		0.45	20
Chrysene-d		IS 5	23.67		
Pyrene 12		U		0.33	20
Butylbenzylphthalate	0.39	J	22.62		20
3,3'-Dichlorobenzidine		U		0.94	20
bis(2-Ethylhexyl)phthalate	16.27	J	23.83		20
Benzo(a)anthracene	•	U		0.35	20
Chrysene		U		0.38	20
Perylene-d ₁₂		IS 6 High	27.30		
Di-n-octylphthalate		U		0.25	20
Benzo(b)fluoranthene		U		0.34	20
Benzo(k)fluoranthene		U		0.35	20
Benzo(a)pyrene		U	•	0.35	20
Indeno(1,2,3-cd)pyrene		U		0.36	20
Dibenz(a,h)anthracene		U		0.48	20
Benzo(g,h,i)perylene		U		0.42	20

Reviewed by _______ Date <u>03/20/96</u>

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit

IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

Project Number: 36062A Method 8270A

Sample File: YL525 Sample ID COE-HG-AFTOUT-M23-R1

Client Project: COE HOT GAS PRG Date Received: 02/02/96
TLI ID: 113-204-1A-E Date Extracted: 02/07/96
Date Analyzed: 03/08/96

Dilution Factor: 2

Tentatively Identified Compounds

Name	RT	Area	IS RT	IS Area	Amount, ug
Benzaldehyde	8.301	25244264	9.095	1851062	1091
Substituted Benzaldehyde	11.244	332237	11.563	2174095	12
Substituted Alkane	12.895	1491038	11.563	2174095	55
Triacetin	13.292	2811989	11.563	2174095	103
Aromatic Ketone	13.420	393112	15.156	2711062	12
Bibenzyl	15.553	1853983	15.156	2711062	55
Benzophenone	16.672	302264	15.156	2711062	9
Substituted Amide	25.851	1409359	27.295	5248717	21

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17:37 03/20/96

Project Number: 36062A Sample File: YL526

Method 8270A M23 Sample ID: COE-HG-AFTOUT-M23-R2

Client Project: COE HOT GAS PRG

Date Received: 02/06/96 Date Extracted: 02/07/96 Response File: YL518

TLI ID: 113-217-1A-E

Date Analyzed: 03/08/96

Dilution Factor:

Analyte	Amount	FLAG	RT	Det. Limit	Quan. Limit
	ug			ug	ug
1,4-Dichlorobenzene-d		IS 1	9.10		20
Phenol	8.01	J	8.46	2.01	20
bis(2-Chloroethyl)ether		U		3.81	
2-Chlorophenol		U		2.29	20
1,3-Dichlorobenzene		U		1.94	20
1,4-Dichlorobenzene		U		1.86	20
1,2-Dichlorobenzene		U		1.99	20
2,2'-oxybis(1-Chloropropane)		U		3.92	20
Benzyl alcohol	1521.61	E	9.39		20
2-Methylphenol	•	U		3.64	20
3/4-Methylphenol		U		3.59	20
N-Nitroso-di-n-propylamine		U		4.82	20
Hexachloroethane		U		3.89	20
Naphthalene-d ₈		IS 2	11.57		••
Nitrobenzene		Ŭ		2.52	20
Isophorone		U	•	1.42	20
2-Nitrophenol		U		3.68	20
2.4-Dimethylphenol		U		3.10	20
bis(2-Chloroethoxy)methane		U		3.14	20
Benzoic acid	66.93		11.09		50
2.4-Dichlorophenol		U		2.64	20
1,2,4-Trichlorobenzene		U		2.15	20
Naphthalene	1.63	J	11.61		20
4-Chloroaniline		U		2.04	20
Hexachlorobutadiene		U		2.59	20
4-Chloro-3-methylphenol		U		3.23	20

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

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Project Number: 36062A Sample File: YL526 Method 8270A M23 Sample ID: COE-HG-AFTOUT-M23-R2

Client Project: COE HOT GAS PRG

Date Received: 02/06/96

Response File: YL518

TLI ID: 113-217-1A-E

Date Extracted: 02/07/96 Date Analyzed: 03/08/96

Dilution Factor:

2.00

Analyte	Amount	FLAG	RT	Det. Limit	Quan. Limit
,	ng			ug	ug
2-Methylnaphthalene		U		1.25	20
Acenaphthene-d ₁₀		IS 3	15.15		
Hexachlorocyclopentadiene		U		2.30	20
2,4,6-Trichlorophenol		U		2.87	20
2,4,5-Trichlorophenol		U	•	2.78	20
2-Chloronaphthalene		U		1.15	20
2-Nitroaniline		U		4.25	50
Dimethylphthalate		U		0.95	20
2,6-Dinitrotoluene		U		4.07	20
2,4-Dinitrotoluene		U		2.65	20
Acenaphthylene		U		0.74	20
3-Nitroaniline		U		3.69	50
Acenaphthene		U		1.32	20
2,4-Dinitrophenol		U		8.39	50
4-Nitrophenol		U		3.99	50
Dibenzofuran	•	U		0.77	20
Diethylphthalate	3.61	J	16.13		20
4-Chlorophenyl-phenylether		U		1.83	20
Fluorene		U		1.00	20
4-Nitroaniline		U		3.62	50
Phenanthrene-d ₁₀		IS 4	18.21		
4,6-Dinitro-2-methylphenol		U	•	4.44	50
N-Nitrosodiphenylamine		U	•	1.43	20
4-Bromophenyl-phenylether		U		2.06	20
Hexachlorobenzene		Ŭ		1.47	20
Pentachlorophenol		U		2.57	50

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit
IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

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Printed: 17:33 03/20/1996

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Project Number: 36062A Sample File: YL526

Method 8270A M23 Sample ID: COE-HG-AFTOUT-M23-R2

Response File: YL518

Client Project: COE HOT GAS PRG

TLI ID: 113-217-1A-E

Date Received: 02/06/96 Date Extracted: 02/07/96

Date Analyzed: 03/08/96

Dilution Factor:

2.00

Analyte	Amount	FLAG	RT	Det Limit	Quan. Limit
	ug			ug	ug
Phenanthrene		U		0.56	20
Anthracene		U		0.57	20
Di-n-butylphthalate	15.26	J	19.53		20
Fluoranthene		U		0.43	20
Chrysene-d	•	IS 5 High	23.67		
Pyrene 12		U		0.30	20
Butylbenzylphthalate		U		0.53	20
3,3'-Dichlorobenzidine		U		0.85	20
bis(2-Ethylhexyl)phthalate	18.01	J	23.83		20
Benzo(a)anthracene		U		0.32	. 20
Chrysene		U	•	0.34	20
Perylene-d ₁₂		IS 6 High	27.29		
Di-n-octylphthalate		U		0.28	20
Benzo(b)fluoranthene		U		0.39	20
Benzo(k)fluoranthene		U		0.40	20
Benzo(a)pyrene		U		0.40	20
Indeno(1,2,3-cd)pyrene		U		0.40	20
Dibenz(a,h)anthracene		U		0.53	20
Benzo(g,h.i) perylene		U		0.47	20

___ Date <u>03/20/96</u> Reviewed by _

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit

IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

Project Number: 36062A Method 8270A

Sample ID COE-HG-AFTOUT-M23-R2 Sample File: YL526

Client Project: COE HOT GAS PRG 02/06/96 Date Received: TLI ID: Date Extracted: 02/07/96 113-217-1A-E

Date Analyzed: 03/08/96 Dilution Factor:

Tentatively Identified Compounds

Name	RT	Area	IS RT	IS Area	Amount, ug
Benzaldehyde	8.329	66249179	9.096	1927605	2749
Alkylbenzene	10.126	206466	9.096	1927605	9
Substituted Benzene	11.014	11103797	11.567	2251279	395
Substituted Benzaldehyde	11.248	4940 96	11.567	2251279	18
Substituted Benzene	11.489	234228	11.567	2251279	8
Alkyl Methyl Ester Benzoic Acid	12.907	274833	11.567	2251279	10
Aromatic Ketone	13.417	549478	15.154	2779875	16
Bibenzyl	15.558	7177058	15.154	2779875	207
Benzophenone	16.664	639684	15.154	2779875	18
Substituted Amide	25.847	1154626	27.287	4621595	20

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Project Number: 36062A Sample File: YL527

Method 8270A M23 Sample ID: COE-HG-AFTOUT-M23-BT

Client Project: COE HOT GAS PRG TLI ID: 113-217-3A-E

Date Received: 02/06/96 Date Extracted: 02/07/96 Response File: YL518

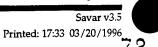
Date Analyzed: 03/08/96

Dilution Factor:

2.00

Analyte	Amount	FLAG	RT	Det Limit	Quan. Limit
raitalyte	ng			ug	ng
1,4-Dichlorobenzene-d		IS 1	9.10		
Phenol	9.08	J	8.46		20
bis(2-Chloroethyl)ether	•	U		3.72	20
2-Chlorophenol		U		2.24	20
1,3-Dichlorobenzene		U		1.90	20
1,4-Dichlorobenzene		U		1.81	20
1,2-Dichlorobenzene		U		1.95	20
2,2'-oxybis(1-Chloropropane)		U		3.83	20
Benzyl alcohol	2515.21	E	9.39		20
2-Methylphenol		U		3.56	20
3/4-Methylphenol		U		3.50	20
N-Nitroso-di-n-propylamine		U		4.70	20
Hexachloroethane		U		3.80	20
Naphthalene-d _g		IS 2	11.57		
Nitrobenzene		U		2.63	20
Isophorone		U		1.48	20
2-Nitrophenol		U		3.84	20
2,4-Dimethylphenol		U		3.24	20
bis(2-Chloroethoxy)methane		U		3.28	20
Benzoic acid	48.28	J	11.05		50
2,4-Dichlorophenol	•	U		2.76	20
1,2,4-Trichlorobenzene		U		2.24	20
Naphthalene	1.64	J	11.61		20
4-Chloroaniline		U		2.13	20
Hexachlorobutadiene		U		2.70	20
4-Chloro-3-methylphenol		U		3.38	20

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range



Project Number: 36062A Sample File: YL527

Method 8270A M23 Sample ID: COE-HG-AFTOUT-M23-BT

Response File: YL518

Client Project: COE HOT GAS PRG

TLI ID: 113-217-3A-E

Date Received: 02/06/96 Date Extracted: 02/07/96

Date Analyzed: 03/08/96

Dilution Factor:

Analyte	Amount	FLAG	RT	Det Limit	Quan. Limit
	ug			ug	ug
2-Methylnaphthalene		U	•	1.31	20
Acenaphthene-d		IS 3	15.15		_
Hexachlorocyclopentadiene		U		2.35	20
2,4,6-Trichlorophenol		U		2.93	20
2,4,5-Trichlorophenol		U		2.83	20
2-Chloronaphthalene		U		1.17	20
2-Nitroaniline		U		4.33	50
Dimethylphthalate		U		0.96	20
2,6-Dinitrotoluene		U		4.14	20
2,4-Dinitrotoluene		U		2.70	20
Acenaphthylene		U		0.75	20
3-Nitroaniline		U		3.76	50
Acenaphthene	•	U		1.34	20
2,4-Dinitrophenol	•	U		8.55	50
4-Nitrophenol		U		4.06	50
Dibenzofuran		U		0.78	20
Diethylphthalate	1.29	J	16.12		20
4-Chlorophenyl-phenylether		U		1.86	20
Fluorene		U		1.02	20
4-Nitroaniline		U		3.68	50
Phenanthrene-d ₁₀		IS 4	18.21		
4,6-Dinitro-2-methylphenol		U		4.56	50
N-Nitrosodiphenylamine		U		1.47	20
4-Bromophenyl-phenylether		U		2.11	20
Hexachlorobenzene		U		1.51	20
Pentachlorophenol		U		2.64	50

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

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Project Number: 36062A Sample File: YL527

Method 8270A M23 Sample ID: COE-HG-AFTOUT-M23-BT

Client Project: COE HOT GAS PRG TLI ID: 113-217-3A-E

Date Received: 02/06/96 Date Extracted: 02/07/96 Date Analyzed: 03/08/96 Response File: YL518

Dilution Factor:

2.00

Analyte	Amount	FLAG	RT	Det Limit	Quan. Limit
· AASTAS J TT	ug			ug	ug
Phenanthrene	•	U		0.58	20
Anthracene		U		0.58	20
Di-n-butylphthalate	8.30	J	19.53		20
Fluoranthene		U		0.44	20
Chrysene-d ₁₂		IS 5 High	23.67		
Pyrene Pyrene		U		0.30	20
Butylbenzylphthalate		U		0.52	20
3,3'-Dichlorobenzidine		U	•	0.84	20
bis(2-Ethylhexyl)phthalate	4.49	J	23.83		20
Benzo(a)anthracene		U		0.31	20
Chrysene		U		0.34	20
Perylene-d ₁₂		IS 6 High	27.28		
Di-n-octylphthalate		U		0.31	20
Benzo(b)fluoranthene		U		0.42	20
Benzo(k)fluoranthene		Ŭ		0.43	20
Benzo(a)pyrene		U		0.43	20
Indeno(1,2,3-cd)pyrene		U		0.44	20
Dibenz(a,h)anthracene		U		0.58	20
Benzo(g,h.i)perylene	•	U		0.51	20

___ Date <u>03 120 19(l</u> Reviewed by

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit

IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range



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Project Number: 36062A Method 8270A

Sample File: YL527 Sample ID: COE-HG-AFTOUT-M23-BT

Client Project: COE HOT GAS PRG

TLI ID: 113-217-3A-E Date Extracted: 02/07/96
Date Analyzed: 03/08/96

Dilution Factor: 2

Date Received:

02/06/96

Tentatively Identified Compounds

Name	AT	Area	IS RT	IS Area	Amount, ug
Benzaldehyde	8.358	1.2E+08	9.096	1981678	4835
Methyl Ester Benzoic Acid	10.269	1494525	9.096	1981678	60
Substituted Benzene	11.043	49167191	11.569	2239192	1757
Substituted Benzaldehyde	11.249	283057	11.569	2239192	10
Alkyl Methyl Ester Benzoic Acid	12.909	336455	11.569	2239192	12
Triacetin	13.299	9229154	11.569	2239192	330
Aromatic Ketone	13.412	307243	15.148	2626618	9
Bibenzyl	15.553	1827178	15.148	2626618	56
Benzophenone	16.665	359349	15.148	2626618	11
Alkyl Acid	19.501	938725	18.210	3588580	21
Substituted Aromatic Hydrocarbon	24.120	1885040	23.671	6236833	24
Substituted Aromatic Hydrocarbon	25.865	4053193	27.280	4280372	76

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Project Number: 36062A Sample File: YL523

Method 8270A TOLUENE Sample ID: SBLK 020896

Client Project: COE HOT GAS PRG

TLI ID: SBLK020896

Date Received: 11 Date Extracted: 11

Date Analyzed: 03/08/96

Dilution Factor: 2.00 Response File: YL518

Analyte	Amount FLAG	RT	Det Limit	Quan. Limit
MHALYIC	ng		ug	ng
1,4-Dichlorobenzene-d	IS 1	9.10		20
Phenol	Ŭ		2.87	20
bis(2-Chloroethyl)ether	Ŭ		3.42	20
2-Chlorophenol	U		2.06	20
1,3-Dichlorobenzene	U		1.75	20
1,4-Dichlorobenzene	U		1.67	20
1,2-Dichlorobenzene	Ŭ		1.79	20
2,2'-oxybis(1-Chloropropane)	U		3.52	20
Benzyl alcohol	Ŭ		6.51	20
2-Methylphenol	U		3.28	20
3/4-Methylphenol	U		3.23	20
N-Nitroso-di-n-propylamine	U		4.33	20
Hexachloroethane	U		3.50	20
Naphthalene-d _g	IS 2	11.57		
Nitrobenzene	U		2.26	20
Isophorone	U		1.27	20
2-Nitrophenol	U		3.30	20
2.4-Dimethylphenol	U		2.78	20
bis(2-Chloroethoxy)methane	U		2.82	20
Benzoic acid	U		3.72	50
2,4-Dichlorophenol	U		2.37	20
1,2,4-Trichlorobenzene	U		1.93	20
Naphthalene	U		0.76	20
4-Chloroaniline	U		1.83	20
Hexachlorobutadiene	U		2.32	20
4-Chloro-3-methylphenol	. U		2.90	20

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

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Project Number: 36062A Sample File: YL523 Method 8270A TOLUENE Sample ID: SBLK 020896

Client Project: COE HOT GAS PRG

Date Received: // Date Extracted: //

Response File: YL518

TLI ID: SBLK020896

Date Analyzed: 03/08/96

Dilution Factor:

2.00

Analyte	Amount	FLAG	RT	Det Limit	Quan. Limit
	ug -			ug	ug
2-Methylnaphthalene		U		1.13	20
Acenaphthene-d ₁₀		IS 3	15.16		
Hexachlorocyclopentadiene		U		2.12	20
2,4,6-Trichlorophenol		U		2.65	20
2,4,5-Trichlorophenol		U		2.55	20
2-Chloronaphthalene		U		1.06	20
2-Nitroaniline		U		3.91	50
Dimethylphthalate		U		0.87	20
2,6-Dinitrotoluene		U		3.74	20
2,4-Dinitrotoluene		U		2.44	20
Acenaphthylene		U		0.68	20
3-Nitroaniline		U		3.40	50
Acenaphthene		U		1.21	20
2,4-Dinitrophenol		U		7.72	50
4-Nitrophenol		U		3.67	50
Dibenzofuran		U		0.71	20
Diethylphthalate		U		0.67	20
4-Chlorophenyl-phenylether	•	U		1.68	20
Fluorene		U		0.92	20
4-Nitroaniline		U	-	3.33	50
Phenanthrene-d		IS 4	18.22		
4,6-Dinitro-2-methylphenol		U		4.77	50
N-Nitrosodiphenylamine		U		1.53	20
4-Bromophenyl-phenylether		U		2.21	20
Hexachlorobenzene		U		1.58	20
Pentachlorophenol		U		2.76	50

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit
IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

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Project Number: 36062A Sample File: YL523

Method 8270A TOLUENE Sample ID: SBLK 020896

Client Project: COE HOT GAS PRG

TLI ID: SBLK020896

Date Received: 11 Date Extracted: //

Date Analyzed: 03/08/96

Dilution Factor:

Response File: YL518

2.00

Analyte	Amount	FLAG	RT	Det Limit	Quan. Limit
4.4444.7.44	ug			ug	ug
Phenanthrene		U		0.60	20
Anthracene		U		0.61	20
		U		0.35	20
Di-n-butylphthalate		U		0.46	20
Fluoranthene		IS 5 High	23.67		
Chrysene-d ₁₂		U	•	0.32	20
Pyrene		Ŭ		0.57	20
Butylbenzylphthalate		Ŭ		0.92	20
3,3'-Dichlorobenzidine				0.42	20
bis(2-Ethylhexyl)phthalate		U		0.34	20
Benzo(a)anthracene	•	Ŭ			20
Chrysene		U		0.37	20
Perylene-d ₁₂		IS 6 High	27.30	(20
Di-n-octylphthalate		U		0.24	20
Benzo(b)fluoranthene		U		0.33	20
Benzo(k)fluoranthene		U		0.34	20
Benzo(a)pyrene		U		0.34	20
Indeno(1,2,3-cd)pyrene		U		0.35	20
Dibenz(a,h)anthracene		U		0.46	20
Benzo(g,h,i) perylene		U		0.40	20

Reviewed by

NA- Not Applicable; Det. Limit: Detection Limit; Quan. Limit: Quantitation Limit

IS: Internal Standard; U: Undetected; B: Present In Blank; J: Estimated- Below Quantitation Limit; E: Estimated- Above Calibration Range

	ROY F. WESTON	
Project Number: Sample File:	36062A YL523	Method 8270A Sample ID SBLK 020896
Client Project: TLI ID:	COE HOT GAS PRG SBLK 020896	Date Received: / / Date Extracted: / / Date Analyzed: 03/08/96
	Dilution Factor:	2

Tentatively Identified Compounds

Name	RI	Area	IS AT	IS Area	Amount, ug
Benzaldehyde	8.286	148680	9.100	2137444	6

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PARTICULATE, HYDROCHLORIC ACID, AND CHLORINE



Roy F. Weston, Inc. 208 Welsh Pool Road Lionville, Pennsylvania 19341-1333 8 610-701-6100 • Fax 610-701-6140

LIONVILLE LABORATORY ANALYTICAL REPORT

Client : COE-HOT GAS

W.O. #: 02281-012-012-1200-00

RFW#: 9602L965

Date Received: 02-07-96

INORGANIC CASE NARRATIVE

- 1. This narrative covers the analyses of 4 acetone, 4 filter, 4 sodium hydroxide and 4 sulfuric acid samples.
- 2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
- 3. Sample holding times as required by the method and/or contract were met.
- 4. The method blanks were within method criteria.
- 5. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS were within the 20% Relative Percent Difference (RPD) control limit.
- 6. The matrix spike recovery for Chloride (as Chloride by IC) was within the 75-125% control limits.
- 7. The replicate analyses were within the 20% RPD control limit.
- 8. Results for Hydrochloric Acid and Chlorine are reported as total milligrams Chloride per sample volumes received.

J. Michael Taylor

Vice President and Laboratory Manager

Lionville Analytical Laboratory

2.23.96

Date

WET CHEMISTRY METHODS GLOSSARY FOR ANALYSIS OF AIR SAMPLES

	<u>ASTM</u>	EPA 600	<u>SW846</u>	OTHER
%Moisture %Solids Hydroboric Acid by IC Hydrochloric Acid by I Hydrofluoric Acid by IC Nitric Acid by IC Phosphoric Acid by IC	С		9056 9056 9056 9056 9056	ILMO4.0 (e) ILMO4.0 (e)
Sulfuric Acid by IC Chromium VI		350.3	⁹⁰⁵⁶ ^{7196A}	_3500D
Ammonia Particulate-Residue Particulate-Filter Sulfur Dioxide		_ 330.3		40-CFR, PT60, App.A, Meth.5 (f) 40-CFR, PT60, App.A, Meth.5 (f) 40-CFR, PT60, App.A, Meth.6 (f)
Sulfuric Acid Mist Nitrogen Oxide Fluoride, Total				40-CFR, PT60, App.A, Meth.8 (f) 40-CFR, PT60, App.A, Meth.7A (f) 40-CFR, PT60, App.A, Meth.13B (f)
Hydrogen Chloride Other: Chlorine	(as Chlori	de) M	lethod: <u>9057</u>	40-CFR, PT60, App.A, Meth.26 (f)

METHOD REFERENCES AND DATA QUALIFIERS

DATA OUALIFIERS

- U Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.
- * Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB - Method or preparation blank.

MS - Matrix Spike.

MSD - Matrix Spike Duplicate.

REP - Sample Replicate.

LC - Indicates a method LCS or Blank Spike.

NC - Not calculable, result below the detection limit.

A suffix of -R, -S or -T following these codes indicate a replicate, spike or spike duplicate analysis respectively.

ANALYTICAL METHODS

- 1. ASTM Standard Methods.
- 2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020)
- 3. Test Methods for Evaluating Solid Waste (USEPA SW846).
- a. Standard Methods for the Examination of Water and Wastewater 16 ed., (1983).
- b. Standard Methods for the Examination of Water and Wastewater 17 ed., (1988).
- c. <u>Methods of Soil Analysis</u>, Part 1, Physical and Mineralogical Methods, 2nd. Ed. (1986).
- d. <u>Methods of Soil Analysis</u>, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
- e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
- f. Code of Federal Regulations.

ROY F. WESTON INC.

INORGANICS DATA SUMMARY REPORT 02/22/96

CLIENT: COE-HOT GAS WESTON BATCH #: 9602L965

	R: 02281-012-012-1200-				REPORTING	DILUTION
SAMPLE	SITE ID AFTOUT-PART-R1-FHA	ANALYTE	RESULT 3.0	UNITS MG	0.10	FACTOR
-002		Particulate	0.10 u	MG	0.10	1.0
-003	AFTOUT-HCL-R1-H2SO4	Hydrochloric Acid by IC	2.0	MG	0.80	10.0
-004	AFTOUT-CL2-R1-NAOH	Chloride by IC	0.12	MG	0.10	4.0
-005	AFTOUT-PART-SB-FILT	Particulate	0.40	MG	0.10	1.0
-006	AFTOUT-PART-SB-ACE	Particulate	0.40	MG	10.10-	1.0
-007	AFTOUT-HCL-SB-H2SO4	Hydrochloric Acid by IC	0. 02 u	MG	0.02	1.0
-008	AFTOUT-CL2-SB-NAOH	Chloride by IC	0.02 u	MG	0.02	1.0
-009	AFTOUT-PART-R2-FHA	Particulate	1.6	MG	0.10	1.0
-010	AFTOUT-PARTR2FLT1832	Particulate	0.10 u	MG	0.10	1.0

INORGANICS DATA SUMMARY REPORT 02/22/96

CLIENT: COE-HOT GAS WESTON BATCH #: 9602L965

WORK ORD	ER: 02281-012-012-1200-	00			REPORTING	DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
-011	AFTOUT-HCL-R2-H2SO4	Hydrochloric Acid by IC	1.7	MG	0.67	10.0
-012	AFTOUT-CL2-R2-NAOH	Chloride by IC	0.60	MG	0.30	10.0
-013	AFTOUT-PART-R3-FHA	Particulate	4.1	MG	0.10	1.0
-014	AFTOUT-PARTR3FLT1825	Particulate	. 0.10 u	MG	0.10	1.0
-015	AFTOUT-HCL-R3-H2SO4	Hydrochloric Acid by IC	0.06 u	MG	0.06	1.0
- 016	APTOITT-CL2-R3-NAOH	Chloride by IC	0.62	MG	10.35	10.0

INORGANICS METHOD BLANK DATA SUMMARY PAGE 02/22/96

CLIENT: COE-HOT GAS

WESTON BATCH #: 9602L965

WODY	OPDER.	02281-012-012-1200-00

WORK ORDI	ER: 02281-012-012-1200-	00			REPORTING	DILUTION
033mr #	SITE ID	ANALYTE	RESULT	UNITS	LIMIT	FACTOR
SAMPLE	2110 ID		*******			*****
BLANK10	96LHCL13-MB1	Hydrochloric Acid by IC	0.01 u	MG	0.01	1.0
מ לאוני מ	967.CT.213-MB1	Chloride by IC	0.01 u	MG	0.01	1.0

INORGANICS ACCURACY REPORT 02/22/96

CLIENT: COE-HOT GAS

WESTON BATCH #: 9602L965

WORK ORD	ER: 02281-012-012-1200-	-00	SPIKED	INITIAL	SPIKED		DILUTION
SAMPLE	SITE ID	ANALYTE	SAMPLE	RESULT	AMOUNT	*RECOV	FACTOR (SPK)
	京水 B 全 B B B B B B B B B B B B B B B B B	医医骶甲状态 不是是是这个是是是是是是是				91.5	10.0
-016	AFTOUT-CL2-R3-NAOH	Chloride by IC	6.3	0.62	6.2	91.5	
	96LHCL13-MB1	Hydrochloric Acid by I	0.20	0.01u	0.20	99.5	1.0
BLANK10	AOTUCTITO -LIDIT	Hydrochloric Acid by I	0.19	0.01u	0.20	96.0	1.0
		Chloride by IC	0.20	0.01u	0.20	99.5	1.0
BLANK10	96LCL213-MB1	Chloride by IC MSD	0.19	0.01u	0.20	96.0	1.0

INORGANICS DUPLICATE SPIKE REPORT 02/22/96

CLIENT: COE-HOT GAS

WESTON BATCH #: 9602L965

WORK ORDER: 02281-012-012-1200-00

			SPIRE#.	I DEIVER	•
SAMPLE	SITE ID	ANALYTE	*RECOV	*RECOV	*DIFF
*****	******			*****	
BLANK10	96LHCL13-MB1	Hydrochloric Acid by IC	99.5	96.0	3.6
BLANK10	96LCL213-MB1	Chloride by IC	99.5	96.0	3.6

INORGANICS PRECISION REPORT 02/22/96

CLIENT: COE-HOT GAS

WESTON BATCH #: 9602L965

WORK ORDER: 02281-012-012-1200-00

WORK ORDI	ER: 02281-012-012-1200-	-00	INITIAL			DILUTION
SAMPLE	SITE ID	ANALYTE	RESULT	REPLICATE	RPD	FACTOR (REP)
		电容器设计电话 经营业业务 医克莱斯氏 医克莱斯氏	****			
-003REP	AFTOUT-HCL-R1-H2SO4	Hydrochloric Acid by IC	2.0	2.0	0.41	10.0
-003REP	AFTOUT-CL2-R1-NAOH	Chloride by IC	0.12	0.11	14.6	4.0
*	AFTOUT-HCL-SB-H2S04	Hydrochloric Acid by IC	0.02u	0.02u	NC	1.0
-007REP	AFTOUT-CL2-SB-NAOH	Chloride by IC	0.02u	0.02u	NC	1.0
-008REP		-	1.7	1.7	0.65	10.0
		•	0.60	0.61	0.82	10.0
		•			NC	1.0
		-		0.62	0.64	10.0
-011REP -012REP -015REP	AFTOUT-HCL-R2-H2SO4 AFTOUT-CL2-R2-NAOH AFTOUT-HCL-R3-H2SO4 AFTOUT-CL2-R3-NAOH	Hydrochloric Acid by IC Chloride by IC Hydrochloric Acid by IC Chloride by IC	1.7 0.60 0.06u 0.62	0.61 0.06u	0.82 NC	10.0

RFW LOT # :9602L965 DATE RECEIVED: 02/07/96 MTX PREP # COLLECTION EXTR/PREP ANALYSIS RFW # CLIENT ID /ANALYSIS AFTOUT-PART-R1-FHA AI 96LPT005 01/31/96 02/12/96 02/17/96 001 PARTICULATE-FILTER AFTOUT-PARTR1FLT1826 02/17/96 AI 96LPT005 01/31/96 02/12/96 002 PARTICULATE-FILTER 1 = AFTOUT-HCL-R1-H2SO4 02/19/96 02/19/96 AI 96LHCL13 01/31/96 HYDROCHLORIC ACID BY 003 02/19/96 AI 96LHCL13 01/31/96 02/19/96 HYDROCHLORIC ACID BY 003 REP AFTOUT-CL2-R1-NAOH 02/19/96 02/19/96 AI 96LCL213 01/31/96 004 CHLORIDE BY IC 02/19/96 004 REP AI 96LCL213 01/31/96 02/19/96 CHLORIDE BY IC AFTOUT-PART-SB-FILT 02/17/96 AI 96LPT005 01/31/96 02/12/96 005 PARTICULATE-FILTER AFTOUT-PART-SB-ACE 02/12/96 02/17/96 AI 96LPT005 01/31/96 PARTICULATE-FILTER 006 AFTOUT-HCL-SB-H2SO4 02/19/96 02/19/96 AI 96LHCL13 01/31/96 HYDROCHLORIC ACID BY 007 02/19/96 AI 96LHCL13 01/31/96 02/19/96 HYDROCHLORIC ACID BY 007 REP AFTOUT-CL2-SB-NAOH 800 AI 96LCL213 01/31/96 02/19/96 02/19/96 CHLORIDE BY IC 01/31/96 CHLORIDE BY IC 008 REP AI 96LCL213 02/19/96 02/19/96 AFTOUT-PART-R2-FHA 02/17/96 PARTICULATE-FILTER 02/12/96

AI 96LPT005 02/02/96

009

DATE RECEIVED: 02/07	/96			;	RFW LOT # :9	602 L 965
CLIENT ID /ANALYSIS	RFW #	MTX	PREP # -	COLLECTION	EXTR/PREP	ANALYSIS
AFTOUT-PARTR2FLT1832				((02/12/96	02/17/96
PARTICULATE-FILTER	010	AI	96LPT005	02/02/96	02/12/96	02/11/36
AFTOUT-HCL-R2-H2SO4				•		
HYDROCHLORIC ACID BY	011		96LHCL13	02/02/96	02/19/96 02/19/96	02/19/96 02/19/96
HYDROCHLORIC ACID BY	011 REP	AI	96LHCL13	02/02/96	02/19/96	02/13/30
AFTOUT-CL2-R2-NAOH					, =	
CHLORIDE BY IC	012	AI	96LCL213	02/02/96	02/19/96	02/19/96
CHLORIDE BY IC	012 REP	AI	96LCL213	02/02/96	02/19/96	02/19/96
AFTOUT-PART-R3-FHA						
PARTICULATE-FILTER	013	AI	96LPT005	02/04/96	02/12/96	02/17/96
AFTOUT-PARTR3FLT1825						
PARTICULATE-FILTER	014	AI	96LPT005	02/04/96	02/12/96	02/17/96
AFTOUT-HCL-R3-H2SO4						
HYDROCHLORIC ACID BY	015	IA	96LHCL13	02/04/96	02/19/96	02/19/96
HYDROCHLORIC ACID BY	015 REP	AI	96LHCL13	02/04/96	02/19/96	02/19/96
AFTOUT-CL2-R3-NAOH			•			
ET CHLORIDE BY IC	016	AI	96LCL213	02/04/96	02/19/96	02/19/96
CHLORIDE BY IC	016 REP		96LCL213		02/19/96	02/19/96 02/19/96
CHLORIDE BY IC	016 MS	AI	96LCL213	02/04/96	02/19/96	02/19/90
LAB QC:						
mmpodulopia vain by	MB1	W	96LHCL13	N/A	02/19/96	02/19/96
HYDROCHLORIC ACID BY HYDROCHLORIC ACID BY	MB1 BS	W	96LHCL13		02/19/96	02/19/96

DATE RECEIVED: 02/07/96

RFW LOT # :9602L965

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
				27/3	02/19/96	02/19/96
HYDROCHLORIC ACID BY CHLORIDE BY IC	MB1 BSD MB1	W	96LHCL13 96LCL213	N/A	02/19/96	02/19/96 02/19/96
CHLORIDE BY IC CHLORIDE BY IC	MB1 BS MB1 BSD	W	96LCL213 96LCL213	N/A N/A	02/19/96 02/19/96	02/19/96

Custody Transfer Record/Lab Work Request

WESTON Analytics Use Only

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381-596a COC Record Present
Upon Sample Rec't

Y or N COC Tape was:

1) Present on Owex
Package Y or N Sample Y of N z 2) Unbroken on Odfe Package Y or (N 3) Present on Sam 4) Unbroken on **WESTON Analytics Use Only** Page 3) Heceived in Good Condition Y or N Ambient or Chilled 1) Shipped or Hand Delivered Properly Bressyed 5) Received Within Holding Tipped 4) Labels Indicate Samples were: WESTON Analytics Use Only Airpil # 3 14ch 905 CM Y Metal ٩ Samples Labels and COC Record? Y or NOTES: (493)和中 Discrepancies Betweer みんで つり Ref# とくろう 5 L378 404 Herb アト ENAS PCB Pest/ ORGANIC Time L377 AN8 75.0 Date Report AOV Liquid Solid Liquid Date Time Collected Collected Solid 1375 Received 31/4 DATE/REVISIONS: #Type Container 12/ 11311 ANALYSES REQUESTED Refrigerator # Preservatives ø ĸ Volume Matrix COS-46 AFTON - HUL-RI-1424 Onc L373 Relinquished by 150 PS 12E-416-17FTQJ -1783-150-194-191 CDK-16-1810A-CL2-1B-MAH Constitute of the state of the 4 COE 416 AFTEN - CL2-10 - NYW O FUM COE-HG AFTON-PAKEI POLFHUT Chosen (X723) Est. Final Proj. Sampling Date O/A - O/A - / JOU L372 6 dof-H6-APTONT-PURI COE.H6-AFTON-PAPA. 7-Ch6-146-144-144-1505 Time FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS Cilent ID/Description न्ध्री ह JA - 1-10T CAS Date Project Contact/Phone # J. D. W. D. L. Received ۵ AD Project Manager (T) 3 Special instructions: 90 RFW 21-21-001/A-7/91 S mo Date Rec'd A Relinquished Liquida EP/TCLP Leachate 8- Soll BE-Sediment BO-Solid BL-Siudge W-Nater W- Air DS- Drum Solids DL - Drum W. Wipe X. Other F. Fish Account # SE E MATRIX CODES:

ant on Sample z Sample Rec't Y or N 2) Unbroken on Outer ecord Present z ŏ ≻ 1) Present on Outer Package Y or N N 10 X (gende 75 \$3.55 A COC Tape was: 5 **WESTON Analytics Use Only** Samp Page Z, 9057 2) Amhent or Chilled 5) Received Within 14th ŏ Property Progenoe ō 4) Labele Indicate ō 3) Received for the Hand Delivered Holding Times Samples were: FAM 5 STON Analytica Use Only 1) Shipped Condition Airbill # СИ **SteM** Custody Transfer Record/Lab Work Request z Discrepancies Between Samples Labels and COC Record? Y or I NOTES: たは Herb 20 PCB Pest/ ORGANIC Time Part / 1111/CL> AN8 Date AOV Date Time Collected Collected Liquid Liquid Received Š #/Type Container DATE/REVISIONS: ANALYSES REQUESTED Refrigerator # Preservatives ø ÷ က က် ٥i E-HO MFTON - PMOT-1/31AHAPAI Volume Matrix Relinquished by Sa-Guillo なよび - Mast Matrix OC Chosen Qar/-130/ CLE-116-AFTON- CL2-PC COK.HO-AFTER-HU-K ALTHOUGHOUT PARCE 74-16 APTON -1909-COE 46 APTOST - CL2-1 JE-16-19-19-14CE-535 20 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS Client ID/Description न्ध्रम्ह S. MALER 7/0 / 5.0Well chark Est. Final Proj. Sampling Path Received **WESTON Analytics Use Only** Clant COn - 450 Project Contact/Phone AD Project Manager -Special instructions: 울으 Work Order # oc sm Relinquished Liquide EP/TCLP Leachate Date Rec'd Account # A - Ar D8 - Drum MATRIX CODES: . ¥×F ᆿ ن

381-596a

Cooler#

Rei

L378

1377

L375

L373

L372

RFW 21-21-001/A-7/91

-002 FHA -002 FILES	,	,					•	!		Worksheet	2120174 10
<u> </u>	Please Pleas	١.	Volume	Tare (1)	Tare (2)	Tare Ave.	Final (1) grams	Final (2) grams	Avg. Final Wr.	Wt. grams	Wt. milligrams
<u> </u>		965-	911	169.9491	109.9488	1090490	9	1256.601	104.9520	05000	3.0
	Filter. # 1926)		П		2385.0	0,3856	0,3860	0.3858	-0,0024	4,2-
	FH TOTAL			17							
	^										,
<u> </u>				•							
	ments	Filler ripped in several Somall	ا به جوسعو	× 1	ius						
<u> </u>		Beaker	Volume	Tare (1)	Tare (2)	T &	Final (1)	Final (2)	Avg. Final Wr. grams	W. grams	W. milligrams
		6-516	01	2/18/221	123.8709	0148.831	123.8725	123.8727	27.8721	0,0010	1.6
	Filter # 1832	1		9285,0	0.3827	0,3826	0.3799	0.3804	2088.0	1-0,w24	-۲،4
_											
E	FH TOTAL										
BHW	N										
BHA	-										
8	Comments	Files wood	and sewera	Smalle	144.8						
		Beaker	Volume	Tare (1)	Tare (2)	Taro	Final (1)	Final (2)	Avg. Final Wt.	.W	W
613		91.5-13	86	113,323	113.3230	113, 3231	113,3271	113.3272	113.3272	0,004/	ر ال
	Filler. # 1825	- 4	1	D, 3902	0.3904	0,3903	0.3672	0, 38 76	0.3874	10,0079	-2.9
E	FH TOTAL										
BHW	W										
BHA	¥I	1									
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Comments	2 2	250	14.07.37	PK 0239	114.0239	114.0741	2420.411	Z \$20.411	D,0004	6.4
- CONT	NA BIK 185	Files RIK 1850 I	1	257.0	0.306B	170 380cl	10 3807	013810	0,3808	10,000 Y	<i>ት'0</i>
	DE: FIA = 1	CODE: FHA = Front half acetone BHW = Back h	ne BHW = Bac	176 4 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0,7904 nter conjents + Reviewed by	water wash BHA - Back half acetone was FH TOTAL	- Back half acetor Date	18 Was FH TOTA		weight TOTAL = 1	= Front half catch weight TOTAL = Total train catch weight ρ
828	Logbook # 502		1009 - 94,941 4 a@		ر ا ا						RFW 21.21.004/2.08 95

* Filt. number on filter is 1831. Filt. number on chain is 1633. Aported The Unlive for 1831.

Lat. Red.										
		≌≞								
1. 1. 1. 1. 1. 1. 1. 1.										
STATE Prep: 62/12/96 STATE		X 50L11								
STATE Prep. 62/12/96 Part	S PREP	FIRE.								
STATE Prep. 62/12/96 Parch P	2011	INITIAL SAMPLE MT.								
State of Preps 62/12/96 State of Preps 62/12/96 State of Preps 62/12/96 State of Preps State			P1965	LP TOOS	PTOMES	LPTORS	19 TB853	LPTBBS	LP 1865	LPTOWS
STATE Part			196	% ::	96	%	26	%	1 96	76
STATE Prop.		Z RECOV								
STATE Prep. 82/12/96 State Path	2	≥ 53 ~								
STATE Prep. 82/12/96 State Path			-							
STATE Prep. 82/12/96 State Part		RECO								
STATE Preprint Part Pa	PIKE	SAMPLE SPIKE AMOUNT								
STATE OF PERCENT STATE S		FIRE LEVEL	!							
STATE OF PERCENT STATE S	. ••	전 * 분		٠	-		•			•
1.1 Aualysis 62/12/96 CALIB DATA	ICATE									
1.1 Avialysis 82/12/96 CALIB DATA	Ð	S 55 S	_		_					
1.1 Avialysis 82/12/96 CALIB DATA			-	_						
1.1 Analysis 82/12/96 Sult 1 Analysis 82/17/96 Sult 1 Analysis 82/17/96 Sult 1 Analysis Sult 1 Analysis Sult 1 Analysis Sult 1 Analysis Sult 1 1 1 1 1 1 1 1 1	88	UNITS		æ	\$	#	\$	¥	₽	¥
1.1 Analysis 82/12/96 Sult 1 Analysis 82/17/96 Sult 1 Analysis 82/17/96 Sult 1 Analysis Sult 1 Analysis Sult 1 Analysis Sult 1 Analysis Sult 1 1 1 1 1 1 1 1 1	ATA OPE: EPT:	¥ _ =	=	=	=	=	=	=	=	-
1.1 Au Just 82/12/96 But 1.5 Au Just But Butch 94.5 94.		5 2							:	:
1. Au. y 62/12/96	CA 1 2.ATTO		•	2.4 u	1.6	2.4 u	-:	2.9 u	:	:
1. Au Just 82/12/96		FINA		T		T.		T		
1. Au Just 82/12/96	1885 1885 178 8-3	¥	994	38 0	1686	1999	1600	166	204:	199
1 1 1 1 1 1 1 1 1 1		- co		_	_	_	_	-	_	-
10 12 01 Prep; 67 12 12 Prep; 67 12 12 Prep; 67 12 12 Prep; 67 12	Batch: Wethod: nalyst: waent:	#E1GH GRAMS	6.663	-1.662	198.	-6.00 2	3.5	-1.6 92	3	6.66
10 12 01 Prep; 67 12 12 Prep; 67 12 12 Prep; 67 12 12 Prep; 67 12	12/96 17/96 Run Run Run Instr	FINAL	9254.68	6.3858	23.8726	6.3862	13.3272	6 .3874	14.6242	9.3868
	9 2/1	- 4								
124 - 12	il Prep: Lalysis: (CS	TARE WETGHT	109.949	9.388	123.871	6.382	113.323	6.3%	114.023	6.38
13 Worksheet: Orputer 8: Girectory: NEW SAPE 10 S-92.045-601 S-92.045-601 S-92.045-613 S-93.045-614 S-93.045-614 S-93.045-614 S-93.045-614 S-93.045-614	10 2 6 Rt 11 2 6 Rt 20 8212 10/6-621 10/6-581		ļ* <u>-</u>	拉索	<u>10</u>	:i/k1F	. Pr. T		IFATE	114.11
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	Workst Orpute Greet	RFW	+ 2967 128€€	196 V 0	196 T. 80:	1967.08	-2921.965-	-596 1.03	396 T.094	-592 KB-

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WESTON®

IC PREPARATION LOG

Method # 21-15L-0300.0 Rev 02

Logbook # 5305

Analysis Logbook # 5306

Prep Batch: 96170413

End Time: 1626

Instrument: Dionex-2020i

1946

End Time:___

Analyst: M. Carry	Start Time:0	946	End Time:		
Analyst:	Prep. Wt/Vol.	Dilution	Spike Amount	ac	Comments SAMPLE VILLEC.
10/6 00/	10 ML	10,4,1	NA.	STIS	350
96024965-004	10.00	10,4,1			250
004R		10,			3∞
019		10			300
Oldr		10			310
016		10			310
Olle	·	10	291-10ac		310
0165		10	NA.		800
003		10			800
CO3R					670
011		10		11	670
. 01/R		1		11	620
015		+-;-			620
OSK		1		11	250
007				11	250
007R	-	1		11	200
æ§				+	200
OUBR				1=	
				+-	
			+	+	
		16/96			
		111		+	
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Standard:		1700 000	Expir Date
MS	5305-102-03	1-22-96	2.22.96

RFW 21-21-018/R-01/96

Reviewed By/Date:

WESTON® IC ANALYSIS	IC ANALYSIS SUMMARY: INORGANIC ANIONS
	Jose S Loabook: 5726
15L-0300 U Rev. 02	Diopey 2020i
	Dran Lochook # C105 Worksheet: 7C 4219

	Comments					HC1+179	hyorled as	Die bree	Soul on	total Sumpl	UN. 16(1)	0.0				
FC 4219		Prep. wyvol		1												
H		los 🖈				3	7					3	7.6.20ml			
Worksheet:		ā								$\sum_{\mathbf{N}}$		-24	<i>i</i>	+		
§ 		mg/L mg/kg										7-1	motor			
	1.00	+	T	,	,	,	,	\	,	-	,	,	<u>, </u>			
	TOTAL CAMBILL V	. 0		00/	001	001	250	250	300	300	310	310	310	800	200	670
		ā	1	13												-
5105	Detection	3	mg/kg	0.010 .08	0.010	0.010	0.100	0.100	0.300	6.300	0.310	0.310	0.310	0.800	0.800	0.670 4
3	137	Ē	\dagger	1	١	١	4	*			9,		10		-5-	
Prep. Logbook #:	CLD A: My/CL	A STATE OF THE PROPERTY OF THE	mg/kg	6.009	9810	61.0	66.6	265.76	0,605 "	0,60		0,623 "	" 6PG. d		10	/"
Ë 6	2	+		`	١	`	7	500/						0/	5	9
	Her A Malei	mg/cmg/kg DII		6,009	0.199	T	4.990			00/	St. J. Va		/	1,965	1.957	2.530 110 1.695
		ā		•	l	1	#	7	5	Q	ş	2	0	9/	0,	2
	200		By/Bu	2800	- 586 /	9/6/	0499	004, 0, 431	810.8 610	01 660.6 2610	016 1.997 "	016R 2.009 10	20.288 10	01 95h C	00 3K 2.446 10 1.957	
Analyst: 79 - 67	Anlone	Sample ID#1		BLANK	Jev	ICU DUP.	100-596 20018	That	610	0194	9/0	0162	0165	8 00 3	00 34	110

R" = replicate, " !tanderd.	H" :: replicate, "S" = matrix spike, "T" :: matrix spike duplicate	= matrix spike Prep Date	duplicate Expr Date
CV ICVDUP LCS	11-16-104-33 3-15-16	2-15-86	2.200
HIM CCV	8/	7	7
7.72	5-66-1 80-401-7052	93.56-1	2.49.80

Example Calculation:

Y ax + b

Y instrument reading
a slope of the regression line
b V-instrument
x concentration
result X x dilution factor

Reviewed By/Date:

Page 4

0.18

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IC ANALYSIS SUMMARY: INORGANIC ANIONS

WESTON®

RFW 21 211-021U 12 95

WESTON Analytics Inorganics Section

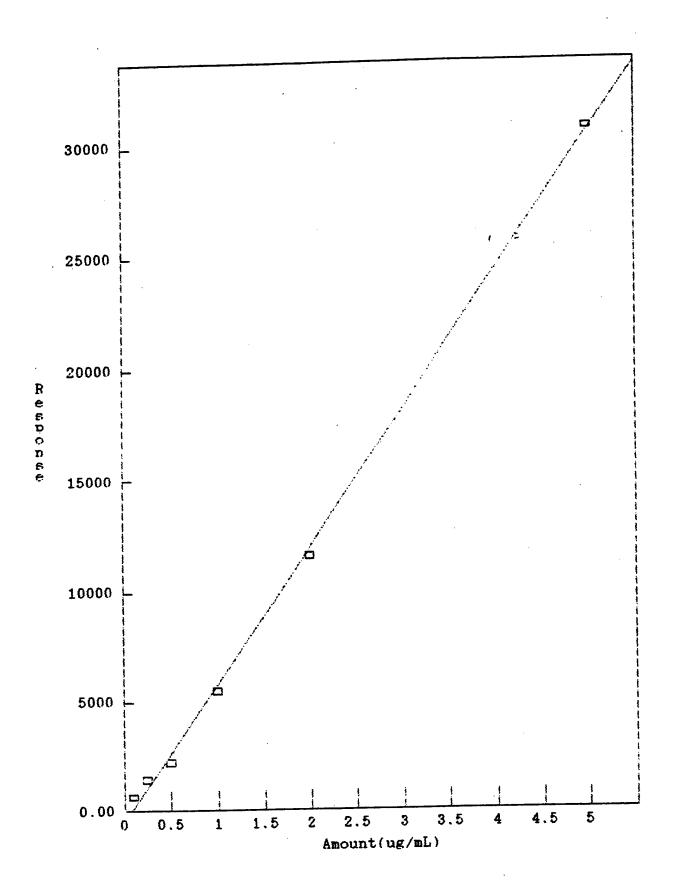
SOILS FREF	: INITIAL SAM'LE	X ! PREP SAMPLE VOL X AIN. RECOV ! BATCH MT. REC'D SOLIDS THE			1 96LHCL13 1853 1853 1853				1 96LHCL13 623	: 96LHCL13 628			: 96LHCL13 15E	; 96LCL213 10E			1 98LCL213 25.9	; 96LCL213 25@	; 96LCL213 333	; 96LCL213 303	; 96LCL213 313			: 96LCL213 203	1 96LCL213 263	; 96LCL213 140	; 96LCL213 193	
=	Æ	103 1			•		·																· ·					
••	**	Z RECOV		92.0	91.5								9.96		95.0								3 91.5				9.96 8	
9 8	SAMPLE	SP IKE		9. 200	6.200								0.200		9.266	0.200							6.200				0.200	
8	7	LEVEL 5.89		6.2	6.5								0.3		9.2	9.2							1 6.2				1 6.2	
-	 dy	2 ~ H			 8. F			1.7		:	346 4 1		•			3.8		14.6		8	}	9.0			•	-		
PAST POST				. 989	.669	¥70	3	1.693	<u>.</u>	9.666	400	.74.0	6.666		989	6.69		1.125		6.605		6.619	9.619		-		6.666	
ğ		SAMPLE		_	•	_	• 			_																		
DATA SLOPE: 1.09 RCEPT: 0.00		LIMIT :	0.969 u 6.918 KB	6.199 6.019 MG 1	6.910 MS	0.886 NG		_	-	9. 669 MG	6.02	0.000 U U U U U U U U U U U U U U U U U	9.6							700		#	SM GIL W COC 7		979	676.0		
CALIB DATA SLOPE: 1.00 INTERCEPT: 0.00	LUMMELALIUM LUETT I	C/D RESLT 6.25 UNITS 1	-	0.199	0.192 0.010 MG :	1.666 1.965 6.866 NG	1.75/ W. 02.00 IN		n 980.6	9.669 u 8.869 MG	0.024 u 0.025		9.6	. 000			7/1.4	201.2 C21.2	201 10 001 10 T	20°0 C40°0	200.0 010.0 2000.1	710.0 0000.1	011. 0 COC 7	217.6 77.70 AGGA-1	070.0	476.0 D 946.0	0.010	
CALIB DATA UN Batch: 94LIC013 SLOPE: 1.00 Hethod: EPA-300 INTERCEPT: 0.00	יייייייייייייייייייייייייייייייייייייי	FINAL LIMIT : RESULT 6.25 UNITS :	g n 696.9 888.1 1 6	1.5666 6.199	1 1.666 0.192 6.510 MG	1. 59.00 1. 595.1 50.00 TO	19 1.42/ 1.43/ W.476 M.	1.684	0 000 0 000 1 1 1 000 c	1.666 0.660 u 6.869 MS	1 1.666 6.624 u 9.623	C78.8 0.868.8 0.868.1 1	0.192 0.618	# 1		11.00 0.11.0 0.00.1 1 1 1 1 1 1 1 1 1 1	TALL STATE OF THE	The contract of the contract o		Section Color of the Color of t		F.C. 9 9999.1 91 (1979)	9.623 19. 1. 200 4 200 1 20 20 20 20 20 20 20 20 20 20 20 20 20	27.79 and 1. 27.79 and 1. 27.79			6.606 1 1.6086 5.804 u 5.818	
rep: 62/19/96 Fsis: 62/19/96 Run Batch: 96LIC613 February ERA - 366 INTERCEPT: 0.66	LUMMELALIUM LUETT I	DILUTION FINA LIMIT : FACTOR C/D RESULT 0.25 UNITS :	900 1 1 600 0 00 0	6 199 6.199 1 1.6066 6.199 6	6.192 6.192 1 1.0000 0.192 0.010 MG	1.965 1.965 1.966 1.965	1.957 1.957 19 19 19 19 19 19 19 19 19 19 19 19 19	2001 2000 1 20 20 1 20 1 20 1	0 0000 00001	8 0.000 0.000 1 1.0000 0.000 u 0.000 MG	0.624 0.624 1.6666 0.924 U 0.625	CAN'N D 990 0 9990 1 1 990 0 990 0 5	1.0000 0.192 0.010			0.199 9.199 1.000.0 0.199 0.19	THE SELECTION OF THE SE	Carron Carron Bases 4 CSI-0 CSI-0	TOTAL SOLID AND THE STATE OF TH	20°5 20°5 20°5 20°5 20°5 20°5 20°5 20°5	## ## ### ### ### ### ##### ##########	F.619 8.619 19 15.80 91.00	6.623 6.623 10. 1.9599 6.023 6.031	5. 6.772 6.274 19 1.000 a non a non a non a non a			1 1.8088 8.898 u 5.818	

DIONEX SCHEDULE - C:\DX\SCHEDULE\021996.SCH

	710					
1#	Sample Name	Method	Data File	Vol.	Dil.	Int.Std.
<u> </u>		\ AC 4 A Q Q 5 7	\ PAWDATA1	1	1	1
	BLANK 02/19/96 09:46	\AD4ABUD:	\RAWDATA1	ī	1	1
	AUTOCAL1	\A54A9057	\ DAWDATA1	<u>ī</u>	1	1
3	AUTOCAL2	\AS4A9057	\DAUDDIDI 'ATATWAD'	1	1	1
	AUTOCAL3	\AS4A9UD{	\RAWDATA1	ī	1	1
5	AUTOCAL4	\AS4A9U57	\RAWDATA1	1	1	1
6	AUTOCAL5	\AS4A9U57	\RAWDATA1	1	1	1
7		\AS4A9057	\KAMUAIAI	•	•	1
	10 PPM	\AS4A9057	\ KAWUAIAI	1	1	ī
9	96LIC013-ICV	\AS4A9057	RAWDATA1 RAWDATA1 RAWDATA1	1	1	1
10	96LIC013-ICB	\AS4A9057	\RAWDATAI	1	1	1
11	OCT TOOLS_TOV 2	\AS4A9UD1	/KWMUNINI	1	1	1
12	06021 065_004	\AS4A9U57	/KAMDAIAI	1	1	1
13	0.000 0.00 - 0.04D	\AS4A9057	\RAWDATA1	1		1
14	9602L965-012	\AS4A9057	\RAWDATA1	1	10	1
15	9602L965-012R	\AS4A9057	\RAWDATA1	$i = \frac{1}{i}$	10	1
	AAAAT AAE AAE	\AS4A9057	',,\RAWDATAl	1	10	1
	01CD	\AS4A9057	'\RAWDATA1	1	10	1
10		\ ACAAQ067	' \ DAWNATA 1	1	10	1
	BLANK	\AS4A9057	\RAWDATA1	1	1	1
	CCV	\AS4A9057	\RAWDATA1	1	1	1
	CCY	\AS4A9057	\RAWDATA1	1	· 1	1
	CCB 9602L965-003	\AS4A9057	RAWDATA1 RAWDATA1 RAWDATA1 RAWDATA1 RAWDATA1 RAWDATA1	1	10	1
	90025300-000	\AS4A9057	\RAWDATA1	1	10	1
	9602L965-003R	\AS4A9057	\RAWDATA1	1	10	1
	• • • • • • • • • • • • • • • • • • •	\AS4A9057	\RAWDATA1	1	10	1
		\AS4A9057		<u>1</u>	1	1
26	00000000	\AS4A9057		1	1	1
	00002000 02012	\AS4A9057		. 1	1	1
	BLANK	COURANDA),,		. 1	ī	1
	CCA	\AS4A9057		1	1	1
	CCB	\AS4A9057		1	1	1
	9602L965-007	\AS4A9057		1	ī	1
32	9602L965-007K	\AS4A9057		1	1	1
	BLANK	\AS4A9057	\RAWDATA1	1	1	1
34	9602L965-008	\AS4A905	RAWDATA1	1	1	1
35	9602L965-008L	\AS4A905		1	1	1
36	BLANK	\AS4A905	7\RAWDATA1	1	1	1
	BLANK	\AS4A905	7\RAWDATA1	1	1	1
38	9602L965-004	\AS4A905'	7\RAWDATA1	1	10	. 4
39	9602L965-004R	\AS4A905'	7\RAWDATA1	1	10	1
	BLANK	\AS4A905'	7 \RAWDATA1	1	1	1
	CCV	\AS4A905'	7\RAWDATA1	1	1	1
	CCB	\AS4A905'	7\RAWDATA1	1	1	1
	9602L965-004	\AS4A905'	7\RAWDATA1	1	4	1
	9602L965-004 R	\AS4A905'	7\RAWDATA1	1	4	1
	BLANK	\AS4A905	7\RAWDATA1	1	1	1
	CCV	\AS4A905	7\RAWDATA1	1	1	1
40	CCB 02/19/96 16:26	\AS4A905	7\RAWDATA1	1	1	1
		HAT.T me	t\RAWDATA1	1	1	1
48	HALT	MUDDI. Me	A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	_	_	

Method: AS4A9057.MET -method updated:

Component: CHLORIDE
Fit Type: Linear
r 2: 0.998722
Amt = Resp * 0.0001617 + 0.06977
Resp = Amt * 6185 + -431.5
Standardization: External
Calibration: Height



METALS

Roy F. Weston, Inc. - Lionville Laboratory INORGANIC ANALYTICAL DATA PACKAGE FOR COE-HOT GAS

DATE RECEIVED: 02/0	7/96			:	RFW LOT # :9	602L964
CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
AFTOUT-MMTL-R1-KMN4						
MERCURY, TOTAL	004	AI	96C0095	01/31/96	02/19/96	02/19/96
AFTOUT-MMTL-R1-HCL				·		
MERCURY, TOTAL	005	AI	96C0095	01/31/96	02/19/96	02/19/96
MERCURY, TOTAL	005 REP	AI	96C0095	01/31/96	02/19/96	02/19/96
MERCURY, TOTAL	005 MS	AI	96C0095	01/31/96	02/19/96	02/19/96
MERCURY, TOTAL	005 MSD	AI	96C0095	01/31/96	02/19/96	02/19/96
AFTOUT-MMTL-SB-HNO3	•					
SILVER, TOTAL	800	IA	96L0322	01/31/96	02/17/96	02/19/96
ARSENIC, TOTAL	008	AI	96L0322	01/31/96	02/17/96	02/19/96
BARIUM, TOTAL	008	AI	96L0322	01/31/96	02/17/96	02/19/96
BERYLLIUM, TOTAL	800	AI	96L0322	01/31/96	02/17/96	02/19/96
CADMIUM, TOTAL	008	AI	96L0322	01/31/96	02/17/96	02/19/96
CHROMIUM, TOTAL	800	AI	96L0322	01/31/96	02/17/96	02/19/96
MERCURY, TOTAL	008	IA	96C0095	01/31/96	02/19/96	02/19/96
NICKEL, TOTAL	008	AI	96L0322	01/31/96	02/17/96	02/19/96
LEAD, TOTAL	008	AI	96L0322	01/31/96	02/17/96	02/19/96
ANTIMONY, TOTAL	008	AI	96L0322	01/31/96	02/17/96	02/19/96
SELENIUM, TOTAL	008		96L0322	01/31/96	02/17/96	02/19/96
THALLIUM, TOTAL	800	AI	96L0322	01/31/96	02/17/96	02/19/96
AFTOUT-MMTL-SB-KMNO4						
MERCURY, TOTAL	009	IA	96C0095	01/31/96	02/19/96	02/19/96
AFTOUT-MMTL-SB-BHHCL						
MERCURY, TOTAL	010	IA	96C0095	01/31/96	02/19/96	02/19/96
AFTOUT-METLS-R2BHHN3						
SILVER, TOTAL	013	IA	96L0322	02/02/96	02/17/96	02/19/96

DATE RECEIVED: 02/07/96 RFW LOT # :9602L964

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
			96L0322	02/02/96	02/17/96	02/19/96
ARSENIC, TOTAL	013		96L0322	02/02/96	02/17/96	02/19/96
BARIUM, TOTAL	013		96L0322	02/02/96	02/17/96	02/19/96
BERYLLIUM, TOTAL	013		96L0322	02/02/96	02/17/96	02/19/96
CADMIUM, TOTAL	013		96L0322	02/02/96	02/17/96	02/19/96
CHROMIUM, TOTAL	013		96C0095	02/02/96	02/19/96	02/19/96
MERCURY, TOTAL	013		96C0095	02/02/96	02/19/96	02/19/96
MERCURY, TOTAL	013 REP			02/02/96	02/19/96	02/19/96
MERCURY, TOTAL	013 MS		96C0095	02/02/96	02/19/96	02/19/96
MERCURY, TOTAL	013 MSD		96C0095	02/02/96	02/17/96	02/19/96
NICKEL, TOTAL	013		96L0322		02/17/96	02/19/96
LEAD, TOTAL	013		96L0322	02/02/96	02/17/96	02/19/96
ANTIMONY, TOTAL	013		96L0322	02/02/96	02/17/96	02/19/96
SELENIUM, TOTAL	013		96L0322	02/02/96	02/17/96	02/19/96
THALLIUM, TOTAL	013	AI	96L0322	02/02/96	02/1//96	02/13/30
AFTOUT-METLS-R2-KMN4						
MERCURY, TOTAL	014	AI	96C0095	02/02/96	02/19/96	02/19/96
The state of the s	014 REP		9600095	02/02/96	02/19/96	02/19/96
MERCURY, TOTAL MERCURY, TOTAL	014 MS	AI	96C0095	02/02/96	02/19/96	02/19/96
MERCURY, TOTAL	014 MSD		96C0095	02/02/96	02/19/96	02/19/96
AFTOUT-METLS-R2-HCL						
MERCURY, TOTAL	015	IA	96C0095	02/02/96	02/19/96	02/19/96
AFTOUT-METLS-R3BHHN3						
SILVER, TOTAL	018	AI	96L0322	02/04/96	02/17/96	02/19/96
ARSENIC, TOTAL	018	AI	96L0322	02/04/96	02/17/96	02/19/96
BARIUM, TOTAL	018	AI	96L0322	02/04/96	02/17/96	02/19/96
BERYLLIUM, TOTAL	018	AI	96L0322	02/04/96	02/17/96	02/19/96
CADMIUM, TOTAL	018	AI	96L0322	02/04/96	02/17/96	02/19/96
CHROMIUM, TOTAL	018	AI	96L0322	02/04/96	02/17/96	02/19/96
MERCURY, TOTAL	018	AI	96C0095	02/04/96	02/19/96	02/19/96
NICKEL, TOTAL	018	AI	96L0322	02/04/96	02/17/96	02/19/96
LEAD, TOTAL	018		96L0322	02/04/96	02/17/96	02/19/96
ANTIMONY, TOTAL	018		96L0322	02/04/96	02/17/96	02/19/96

DATE RECEIVED: 02/07/96 RFW LOT # :9602L964

D.1.12 1.12-2.2.	•					
CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
COLUMN TOTAL	018		96L0322	02/04/96	02/17/96	02/19/96
SELENIUM, TOTAL THALLIUM, TOTAL	018		96L0322	02/04/96	02/17/96	02/19/96
AFTOUT-METLS-R3-KMN4						•
MERCURY, TOTAL	019	AI	96C0095	02/04/96	02/19/96	02/19/96
AFTOUT-METLS-R3-HCL					•	
MERCURY, TOTAL	020	AI	96C0095	02/04/96	02/19/96	02/19/96
OUT-METLS-PTRA-HNO3						
SILVER, TOTAL	021	AI	96L0322	01/30/96	02/17/96	02/19/96
ARSENIC, TOTAL	021	AI	96L0322	01/30/96	02/17/96	02/19/96
BARIUM, TOTAL	021	AI	96L0322	01/30/96	02/17/96	02/19/96
BERYLLIUM, TOTAL	021	AI	96L0322	01/30/96	02/17/96	02/19/96
CADMIUM, TOTAL	021	AI	96L0322	01/30/96	02/17/96	02/19/96
CHROMIUM, TOTAL	021	AI	96L0322	01/30/96	02/17/96	02/19/96
ERCURY, TOTAL	021		96C0095	01/30/96	02/19/96	02/19/96
NICKEL, TOTAL	021		96L0322	01/30/96	02/17/96	02/19/96
LEAD, TOTAL	021		96L0322	01/30/96	02/17/96	02/19/96
	021		96L0322	01/30/96	02/17/96	02/19/96
•=	021		96L0322	01/30/96	02/17/96	02/19/96
SELENIUM, TOTAL THALLIUM, TOTAL	021		96L0322	01/30/96	02/17/96	02/19/96
COMP R1						
SILVER, TOTAL	023	AI	96L0322	01/31/96	02/17/96	02/20/96
ARSENIC, TOTAL	023	AI	96L0322	01/31/96	02/17/96	02/20/96
BARIUM, TOTAL	023	AI	96L0322	01/31/96	02/17/96	02/20/96
BERYLLIUM, TOTAL	023	AI	96L0322	01/31/96	02/17/96	02/20/96
CADMIUM, TOTAL	023	AI	96L0322	01/31/96	02/17/96	02/20/96
CHROMIUM, TOTAL	023		96L0322	01/31/96	02/17/96	02/20/96
MERCURY, TOTAL	023		96C0095	01/31/96	02/19/96	02/19/96
NICKEL, TOTAL	023		96L0322	01/31/96	02/17/96	02/20/96
LEAD, TOTAL	023		96L0322	01/31/96	02/17/96	02/20/96
ANTIMONY, TOTAL	023		96L0322	01/31/96	02/17/96	02/20/96
PHILLIONI, TOTAL				•	•	

DATE RECEIVED: 02/07/96

RFW LOT # :9602L964

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
				01/31/96	02/17/96	02/20/96
SELENIUM, TOTAL	023		96L0322	01/31/96	02/17/96	02/20/96
THALLIUM, TOTAL	023	AI	96L0322	01/31/96	02/17/50	
COMP-SB						
SILVER, TOTAL	024	AI	96L0322	01/31/96	02/17/96	02/20/96
ARSENIC, TOTAL	024	AI	96L0322	01/31/96	02/17/96	02/20/96
BARIUM, TOTAL	024	AI	96L0322	01/31/96	02/17/96	02/20/96
BERYLLIUM, TOTAL	024	AI	96L0322	01/31/96	02/17/96	02/20/96
	024	AI	96L0322	01/31/96	02/17/96	02/20/96
CADMIUM, TOTAL	024		96L0322	01/31/96	02/17/96	02/20/96
CHROMIUM, TOTAL	024		96C0095	01/31/96	02/19/96	02/19/96
MERCURY, TOTAL	024		96L0322	01/31/96	02/17/96	02/20/96
NICKEL, TOTAL	024		96L0322	01/31/96	02/17/96	02/20/96
LEAD, TOTAL	024		96L0322	01/31/96	02/17/96	02/20/96
ANTIMONY, TOTAL	024		96L0322	01/31/96	02/17/96	02/20/96
SELENIUM, TOTAL THALLIUM, TOTAL	024		96L0322	01/31/96	02/17/96	02/20/96
COMP R2						
SILVER, TOTAL	025	AI	96L0322	02/02/96	02/17/96	02/19/96
ARSENIC, TOTAL	025	AI	96L0322	02/02/96	02/17/96	02/19/96
BARIUM, TOTAL	025	AI	96L0322	02/02/96	02/17/96	02/19/96
BERYLLIUM, TOTAL	025	AI	96L0322	02/02/96	02/17/96	02/19/96
CADMIUM, TOTAL	025	AI	96L0322	02/02/96	02/17/96	02/19/96
CHROMIUM, TOTAL	025	AI	96L0322	02/02/96	02/17/96	02/19/96
MERCURY, TOTAL	025	AI	96C0095	02/02/96	02/19/96	02/19/96
NICKEL, TOTAL	025	AI	96L0322	02/02/96	02/17/96	02/19/96
LEAD, TOTAL	025	AI	96L0322	02/02/96	02/17/96	02/19/96
ANTIMONY, TOTAL	025	AI	96L0322	02/02/96	02/17/96	02/19/96
SELENIUM, TOTAL	025	AI	96L0322	02/02/96	02/17/96	02/19/96
THALLIUM, TOTAL	025	AI	96L0322	02/02/96	02/17/96	02/19/96
COMP R3						
CTITED TOTAL	026	AΙ	96L0322	02/04/96	02/17/96	02/19/96
SILVER, TOTAL ARSENIC, TOTAL	026		96L0322	02/04/96	02/17/96	02/19/96
BARIUM, TOTAL	026		96L0322	02/04/96	02/17/96	02/19/96
DWKTOM, TOTAL	320				• •	

DATE RECEIVED: 02/07/96

RFW LOT # :9602L964.

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BERYLLIUM, TOTAL CADMIUM, TOTAL CHROMIUM, TOTAL MERCURY, TOTAL NICKEL, TOTAL LEAD, TOTAL ANTIMONY, TOTAL SELENIUM, TOTAL THALLIUM, TOTAL	026 026 026 026 026 026 026 026 026	AI AI AI AI AI AI	96L0322 96L0322 96L0322 96C0095 96L0322 96L0322 96L0322 96L0322	02/04/96 02/04/96 02/04/96 02/04/96 02/04/96 02/04/96 02/04/96 02/04/96 02/04/96	02/17/96 02/17/96 02/17/96 02/19/96 02/17/96 02/17/96 02/17/96 02/17/96 02/17/96	02/19/96 02/19/96 02/19/96 02/19/96 02/19/96 02/19/96 02/19/96 02/19/96

LAB QC:

						/-	02/19/96	02/19/96
	MERCURY LABORATORY	LC1	BS	W	96C0095	N/A	02/19/96	02/19/96
	MERCURY LABORATORY	LC2	BS	W	96C0095	N/A	02/19/96	02/19/96
	MERCURY, TOTAL	MB1		W	96C0095	N/A	02/19/96	02/19/96
_	SILVER LABORATORY	LC1	BS	ΑI	96L0322	N/A		02/19/96
Ì	SILVER LABORATORY	LC2	BS	ΙA	96L0322	N/A	02/17/96	02/19/96
	SILVER, TOTAL	MB1	•	ΑI	96L0322	N/A	02/17/96	02/19/96
	ARSENIC LABORATORY	LC1	BS	ΑI	96L0322	N/A	02/17/96	
	ARSENIC LABORATORY		BS	AI	96L0322	N/A	02/17/96	02/19/96
		MB1		ΑI	96L0322	N/A	02/17/96	02/19/96
	ARSENIC, TOTAL BARIUM LABORATORY	LC1	BS	AI	96L0322	N/A	02/17/96	02/19/96
			BS		96L0322	N/A	02/17/96	02/19/96
	BARIUM LABORATORY	MB1			96L0322	N/A	02/17/96	02/19/96
	BARIUM, TOTAL	LC1	BC	ΑI		N/A	02/17/96	02/19/96
	BERYLLIUM LABORATORY		BS	ΑI		N/A	02/17/96	02/19/96
	BERYLLIUM LABORATORY	MB1	BS		96L0322	N/A	02/17/96	02/19/96
	BERYLLIUM, TOTAL	LC1	DC		96L0322	N/A	02/17/96	02/19/96
	CADMIUM LABORATORY			AI		N/A	02/17/96	02/19/96
	CADMIUM LABORATORY	LC2	55	AI		N/A	02/17/96	02/19/96
	CADMIUM, TOTAL	MB1	50	AI		N/A	02/17/96	02/19/96
	CHROMIUM LABORATORY	LC1		AI		N/A	02/17/96	02/19/96
	CHROMIUM LABORATORY	LC2	BS			N/A	02/17/96	02/19/96
	CHROMIUM, TOTAL	MB1		AI		N/A	02/17/96	02/19/96
	NICKEL LABORATORY	LC1		AI		N/A	02/17/96	02/19/96
	NICKEL LABORATORY	LC2	BS	IA		N/A	02/17/96	02/19/96
	NICKEL, TOTAL	MB1		ΙA			02/17/96	02/19/96
	LEAD LABORATORY	LC1	BS		96L0322	N/A	02/17/96	02/19/96
	LEAD LABORATORY	LC2	BS	A	96L0322	N/A	02/11/50	,,
	- ·							

Roy F. Weston, Inc. - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
COE-HOT GAS

DATE RECEIVED: 02/07/96

RFW LOT # :9602L964

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
	MB1	AI	96L0322	N/A	02/17/96	02/19/96
LEAD, TOTAL	LC1 BS	AI	96L0322	N/A	02/17/96	02/19/96
ANTIMONY LABORATORY	LC2 BS		96L0322	N/A	02/17/96	02/19/96
ANTIMONY LABORATORY	MB1		96L0322	N/A	02/17/96	02/19/96
ANTIMONY, TOTAL	LC1 BS		96L0322	N/A	02/17/96	02/19/96
SELENIUM LABORATORY	LC2 BS		96L0322	N/A	02/17/96	02/19/96
SELENIUM LABORATORY	MB1		96L0322	N/A	02/17/96	02/19/96
SELENIUM, TOTAL	LC1 BS		96L0322	N/A	02/17/96	02/19/96
THALLIUM LABORATORY			96L0322	N/A	02/17/96	02/19/96
THALLIUM LABORATORY	LC2 BS		96L0322	N/A	02/17/96	02/19/96
THALLIUM, TOTAL	MB1	AI	20110322	11/12	,,	• •



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Chain of Custody

Custody Transfer Record/Lab Work Request	Preservatives Preservative	Chosen Mairix Collected Collected Collected Collected Collected Collected Collected Collected Collected St. As De. De. C. C. C. C. P. C. A. S. C.	1 Shipped or 1 Present on Output 1 Shipped or 1 Present or Output 1 Present or Shipped or 1 Present or Output 1 Present or Shipped or 1 Present or
WESTON Analytics Use Only Charles (Charles Use Only)	Maculification of the control of the	See Sold Sold Sold Sold Sold Sold Sold Sold	MMTL- METH SB - SK Y

equest Page 2 of 2					INORG	Metal	WESTON Analytics Use Only	Method 29th 12 112 113 115 115 115 115 115 115 115 115 115	XXXXX	5/ /8/ * **		×	XX	*****	X X X X X X X X X X X X X X X X X X X	 	×		WESTON Analytics Use Only		Discrepancies Between	Samples Labels and 5) Received Within Con Sample Recil COC Record? Y or N Holding Times Y or N Y or N	Ref# Cooler# 381 596a
المامادك Merkus Custody Transfer Record/Lab Work Request	Refrigerator #	#Type Container Liquid	Volume Liquid	Preservatives	ORGANIC	ANALYSES ANALYSES REQUESTED S S S S S S S S S S S S S S S S S S S		Mairin Collected Collected States Gar Beach	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		X X X X X I I I I I I I I I I I I I I I		10	My 1 DAGL XX X X X X X	X X X X X 1 . 1 . 1 . 1 . 1				DATEMENSIONS DE LA LIVINS OU A LIVINS	7 7 9	Received Date Time	ÁG	L373 L375 L377 L378
WESTON Analytics Use Only Custody Tra	۲	I Proj. Sampling Date	1.00% // × 7.00%		202	Rec'd		COORS: Lab Citent ID/Description Chosen (*) 8. Sedment ID Cheent ID/Description Chosen (*) 80. Sedment ID Cheent ID/Description Chosen (*)	W. Water J. CDE J.L. MATTER - Matter Charles - Phillips	である。	HO-W-DH	TO ALTONOMY PROPERTY.	S Chette After New Porte	###	CASE-146 APPROVI-PREMIO-KUS-KUS-FFC	13-1111	CJE 46 AFTEN-MENO-R3-10	1274	FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS	Special instructions:	Reinquished a Received Date Time Relinquished	1 2 July 1	EW 21-21-001/A-7/91

Washing 2 of 3				# Sinn	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	7					WESTON Analytics Use Unly	COC Tape was 1) Present on Outer Package Y or N 2) Unbroken on Outer Package Y or N 3) Propertion Sample 4) Litterhead on N	COC About Present	5 8 -
		INORG	CN	11cs Use Only 1	X X X	7 7 7			7 7		WESTON And	Samples were: 1) Shipped or Hand Delivered or Airbill #	5) Received Within Holding Times	Y or N
ಗ್ನಿಸ್ತಿ ansfer Record/Lab Work Request			Стен	Brath Method	XXXX	7 7			8			RB	Discrepancies Between Samples Labels and COC Record? You N	NOTES:
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الماسيس /Fer Record	#Type Container Solid Volume Solid	Preservatives	ANALYSES REQUESTED	Metrix Date Time	Jec//23/16	13196	1	9800	ग्रामुख		DATE/HEVISHOMS:			1373 1375
Custody Trans	001/-	€		Blatrix OC Chosen (<)	H-221-11	म						}	ne Relinquished by	1372
	10-10-18-00 X	444	Control of the same	Cilent ID/Description	COK-HE-OJI-METRU-	1-Melly	m 055	Pom o la	Com 2 63		FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS	Predución Rins	Received Date Time by	1946 1540
WESTON Analytics Use Only		AD Project Menager		MATTRIC CODES: 8 - Soll 80 - Soll 80 - Soll 80 - Soll	20	8- 0mm 83.00	100 mm	L. EPHOLP 25	X. One		FIELD PERSONNEL: CO	Special Instructions: PTR= Pr	Relinquished A R	S. D. 201 (1)



Case Narrative

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19		1			Ť	SAMPLE RETURN:	RETURN:					
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HFW 21-21-001/2-05/84												



LIONVILLE LABORATORY ANALYTICAL REPORT

Client: COE-HOT GAS

W.O. #: 02281-012-012-1200

RFW#: 9602L964

Date Received: 02-07-96

SW846 METALS

1. This narrative covers the analyses of 16 air samples.

- 2. The samples were prepared with Multi Metals method 29 digestion, analyzed in accordance with SW-846 protocol and reported with CLP deliverable.
- 3. ICVs, CCVs, and LCSs stock standards were purchased from Inorganic Ventures Laboratory and High Purity.
- 4. All analyses were performed within the required holding times.
- 5. All Initial and Continuing Calibration Verifications (ICV/CCV's) were within control limits.
- 6. All Initial and Continuing Calibration Blanks (ICB/CCB's) were within control limits.
- 7. All Preparation/Method Blanks were within method criteria.
- 8. All ICP Interference Check Standards were within control limits.
- 9. All Laboratory Control Samples (LCS) were within the laboratory derived control limits.
- 10. All Mercury matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within the 80-120% control limits. All MSD's were within the 20% Relative Percent Difference (RPD) control limits.
- 11. The duplicate of sample R1H for Mercury analysis was outside the 20% Relative Percent Difference (RPD) control limits.
- 12. The code AV currently in use by the laboratory is for the mercury instruments (HG1 & HG2). HG1 & HG2 are complete with autosampler and software, but still require manual digestion.



- 13. HG1 & HG2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionally scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 ml. For soils, 0.1 gram of sample is taken to a final volume of 50 ml (including all reagents).
- 14. All sample IDs were changed to accommodate the EPA naming convention which allows a maximum of 6 characters on all CLP Forms. Refer to the Cover Page of the CLP Forms to correlate the modified sample IDs to the RFW#s or refer below to correlate modified IDs to original client IDs:

Original ID#s	Modified ID#s
COE-HG-AFTOUT-MMTL-R1-KMNO4	R1K
COE-HG-AFTOUT-MMTL-R1-HCL/H2O	R1H
COE-HG-AFTOUT-MMTL-SB-HNO3/H2O	SBH
COE-HG-AFTOUT-MMTL-SB-KMNO4	SBK
COE-HG-AFTOUT-MMTL-SB-BHHCL	SBB
COE-HG-AFTOUT-METALS-R2-BHHNO3/H2O	R2B
COE-HG-AFTOUT-METALS-R2-KMNO4	R2K
COE-HG-AFTOUT-METALS-R2-HCL	R2H
COE-HG-AFTOUT-METALS-R3-BHHNO3/HCL	R3B
COE-HG-AFTOUT-METALS-R3-KMNO4	R3K
COE-HG-AFTOUT-METALS-HCL	R3H
COE-HG-AFTOUT-PTRA-HNO3	PTRA
COMP R1	COMP R1
COMP SB	COMP SB
COMP R2	COMP R2
COMP R3	COMP R3
COM IC	

. Michael Taylor

Vice President and Laboratory Manager

Lionville Analytical Laboratory

Date

skl\m02-964

METALS METHODS GLOSSARY

	MEXILL			ttallin ahin
RFW Lot#: つしゅつ	2664	for the digestion and analysis	of samples contac	ined within this
- at Durandum	e: _1310 _1311 _	1312 _Other:		
Leaching Procedure	: _1314	T	LM04.0	
CLP Metals _ Dig	estion and Analysis M	lethods:ILMU3.U!	PM04.0	
	2005A 30	10A 3020A3050A	200.7SS1	7
Metals Digestion M	ethous:	10A 3020A 3050A ucu - Mictiles Met	hod 29	
				•
	Metal	s Analysis Methods	EPA	
		EPA	OSWR	USATHAMA
	SW846	200.7		99
Aluminum	6010	200.7 200.7204.2		99
Antimony	6010 _7041	$-\frac{200.7}{200.7}$ $-\frac{204.2}{206.2}$		<u>_</u> 99
Arsenic	760107060A			99
Barium	<u>./</u> 6010	200.7 200.7		99
Beryllium	<u></u>	200.7 200.7 ı	1620 ı	<u>_</u> 99
Bismuth	6010 ı			99
Boron	<u>6010</u>	200.7 200.7 213.2		<u>_</u> 99
Cadmium				<u></u> 99
Calcium	<u>6010</u>	200.7 200.7218.2		SS17
Chromium	$\sqrt{6010}$ -7191			_99
Cobalt	6010	200.7 200.7220.2		99
Соррет	$_{6010}$ $_{7211}$	-200.7 -220.2 200.7		99
Iron	6010	200.7 200.7239.2		99
Lead			1620 ı	<u>_</u> 99
Lithium	6010 i7430 s			<u>99</u>
Magnesium	6010	200.7 200.7	•	99
Manganese	6010	245.1 2245.5 2		99
Mercury	<u></u>	<u>245.1</u>		99
Molybdenum	6010	-200.7 200.7		99
Nickel	<u></u>	200.7 258.1 ₃		99
Potassium	60107610 :	200.7	1620 ı	<u>_</u> 99
Rare Earths	6010 1	200.7270.2	_	99
Selenium	26010 -7740	200.7	1620 ı	99
Silicon	6010	<u>200.7</u>	1620 ı	99
Silica	6010 1 6010 7761	200.7272.2		99
Silver		200.7273.1 3		99
Sodium		200.7		99
Strontium	6010 _/60107841	200.7279.2		99
Thallium	<u></u>	200.7		99
Tin	6010	_{200.7}		99
Titanium	6010 :	200.7 ı	1620 ı	99
Uranium	-6010 ·	200.7		99
Vanadium	-6010 -6010	<u></u> 200.7		99
Zinc	6010	200.7 ı	1620 ı	_99
Zirconium				
Other:	<u>Method</u> :		•	

pas/5-95/method.met

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

- Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit. U.
- Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB - Method or preparation blank.

MS - Matrix Spike.

MSD - Matrix Spike Duplicate.

REP - Sample Replicate.

LCS - Indicates a Laboratory Control Sample.

NC - Not calculated.

ANALYTICAL METAL METHODS

- Modified
- Modified Hg: Hg1 requires less total volume of digestate due to the Sample volumes and reagents for Mercury determinations in water and soil have been proportionally scaled down to autosampler analysis. adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
 - Flame AA 3.



Inorganic Analysis Data Package

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

	COATK LINES THE				
ab Name: ROY_F.	_weston_inc	Contract:	2281-12-13	2	
Lab Code: WESTON	Case No.:	SAS No.:		SDG No.:CO	MPR1
SOW No.: SW846				·	
ere ICP interel	PA Sample No. COMPR1	pplied ? ated before	4-023 4-025 4-026 4-024 4-021 4-005 4-005T 4-005S 4-004 4-013 4-013D 4-013T 4-013S 4-014T 64-014T 64-014S	Yes/No Yes/No Yes/No	YES
application	of background co	fiections :		200,000	
Comments:					
				···	
					
other than the continuous this hardcopy	chis data package ne contract, both conditions detaile data package and the has been authones, as verified by 2. W. 46	d above. Released in the computer rized by the Land	ase of the er-readable aboratory b	data conta e data subm Manager or	ined itted

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: ROY_FWESTON_INC	Contract: 2281-12	!-12	•
Lab Code: WESTON Case No.:	_ SAS No.:	SDG No.:COMPR1	
EPA Sample No. R3H R3K SBB SBH SBK	Lab Sample ID _9602L964-0209602L964-0109602L964-0089602L964-009	- - -	
		- - - - - - - -	
Were ICP interelement corrections a Were ICP background corrections app If yes - were raw data generat application of background corr Comments:	olied ? ced before	Yes/No YES Yes/No YES Yes/No NO_	_
I certify that this data package is conditions of the contract, both to other than the conditions detailed in this hardcopy data package and in this hardcopy data package and in this hardcopy diskette has been authority Manager's designee, as verified by Signature: Date:	above. Release of t	he data contained ble data submitted	- -

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INORGANIC	ANALYSES	DATA	SHEET

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	•	INORGANIC A	ANALYSES DATA S	SHEE	ET	,	
	_						MPR1
			atabe 21	201-	-12-12		MIXI
Lab Name: ROY_F	weston_I	MC	Contract: 22	• • • • • • • • • • • • • • • • • • • •	12 12	SDG N	o.: COMPRI
Tab Code: WESTO)N Cas	se No.:	- SAS NO.	Tab	Sampl	e ID:	9602L964-023
Matrix (soil/Wa	iter): WATE	R		Dat	te Rece	ived:	02/07/96
Level (low/med)	: LOW		•				•
% Solids:	0.						
0	tration	Units (ug.	/L or mg/kg dry	y we	eight):	UG	
Cor	Centracton	011100 (-9)				 ;	
					_	м	
	CAS No.	Analyte	Concentration		Q		
			18.0	- -		P P P AV	
	7440-36-0	Antimony_	4.4	= -		p-	
:	7440-38-2	Arsenic	23.8			P_	
	7440-39-3	Barium	I			P	
	7440-41-7	Beryllium	1.6			P P	
	7440-43-9	Cadmium	44.4			P	
	7440-47-3	Lead	25.1			P	
	7439-92-1 7439-97-6	Mercury	0.07 0.00010	0	*	AV a	23·9L
	7440-02-0	Nickel	8.5	1 1		P_ P_	
	7782-49-2		5.1	ַן סו		P_	
	7440-22-4	Silver	1.3	ען.		P_	
	7440-28-0		4.5	ן שן		P_	
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FORM I - IN

•			1		EPA SAMPLE NO).
	I	NORGANIC P	ANALYSES DATA S	SHEET	COMPES	_
Lab Name: ROY F Lab Code: WESTO Matrix (soil/wa Level (low/med) % Solids:	ter): WATER		Contract: 22 SAS No.:	Tab Sampl	COMPR2 SDG No.: COMP e ID: 9602L964 ived: 02/07/96	1-025
Con	centration	Units (ug/	/L or mg/kg dry	weight):	UG	
	CAS No.	Analyte	Concentration	C Q	м	
	7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-47-3 7439-92-1 7439-97-6 7440-02-0 7782-49-2 7440-22-4	Antimony Arsenic Barium Beryllium Cadmium Chromium Lead Mercury Nickel Selenium Silver Thallium	14.8	Ū	P_P_P_P_P_P_P_	
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FORM I - IN

			1	ינוסטת	EPA SAMPLE NO.
	•	INORGANIC A	ANALYSES DATA S	neer	
Lab Name: ROY_L Lab Code: WESTO Matrix (soil/wa Level (low/med) % Solids:	on Car ater): WATE	se No.: R 	Contract: 22 SAS No.:	Lab Samp	COMPR3 SDG No.: COMPR1 le ID: 9602L964-026 eived: 02/07/96
Cor	ncentration	Units (ug	/L or mg/kg dry	y weight)	: UG
	CAS No.	Analyte	Concentration	c Q	M
	7440-36-0	Antimony_	13.7		P
	7440-38-2	Arsenic_	4.4	<u></u>	P_
	7440-39-3	Barium	2.4		P_
	7440-41-7	Beryllium	0.015	 	P_
	7440-43-9	Cadmium	0.40	ט	P
	7440-47-3	Chromium	32.8		P_
	7439-92-1	Lead	10.3		P_
	7439-97-6	Mercury_	0.02 0.00010	 	AV ED 33.91
	7440-02-0	Nickel	2.6	1 1	P P
	7782-49-2	Selenium_	5.1	0	P_
	7440-22-4	Silver	1.3	ט	P_ P_
	7440-28-0	Thallium_	4.5		P_
	/440-26-0				
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FORM I - IN

		1 ANALYSES DATA S	HEET	EPA SAMPLE	NO.
*				COMPSB	
Matrix (soil/water): WA Level (low/med): LO % Solids:	Case No.: TER W 0.0	Contract: 22 SAS No.: /L or mg/kg dry	Lab Samp Date Rec	SDG No.: Cole ID: 96021 eived: 02/07	,964-024
Concentrati	on Units (ug,	/ L Or mg/ mg == 1		 -	
CAS No.	Analyte	Concentration	C Q	М	
·	Antimony_ 2 Arsenic_ 3 Barium 67 Beryllium 69 Cadmium_ 61 Lead_ 66 Mercury_ 60 Nickel_ 62 Selenium 64 Silver_	1.5 7.8 <u>C.02</u> 0.00010 1.2 	Ū ≠ U U U U U U U U U U U U U U U U U U	P_P_P_P_P_P_P_P_P_P_P_P_P_P_P_P_P_P_P_	
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	FORM T - TN	

•			1	ยออก	EPA SAMPLE NO.
	J	INORGANIC A	NALYSES DATA S	REEI	
					PTRA
Lab Name: ROY I Lab Code: WESTO Matrix (soil/wa Level (low/med) % Solids:	on Cas ater): WATER	se No.: R	Contract: 22 SAS No.:	Tab Samp	SDG No.: COMPR1 Le ID: 9602L964-021 eived: 02/07/96
4 SOLICE.			r /ka dru	weight):	ug ug
Cor	ncentration	Units (ug/	/L or mg/kg dry	weight,	
	CAS No.	Analyte	Concentration	C Q	M
•	7440-36-0	Antimony_	5,4 4.4	0 2/23/90	<u>P</u>
	7440-38-2	Arsenic	3.7 -3.9	7	P_
	7440-39-3	Barium	0.67-0.46		P_ P_ P_ P_ P_
	7440-41-7	Beryllium	0.01 0.070	U	[5 -
	7440-43-9	Cadmium	4,1-4/9		5 -
	7440-47-3	Chromium_	2./		5 _
	7439-92-1	Lead	13.6-10.9	[AV =5.23.46
	7439-97-6	Mercury	0.35 0.0010	ਹ ≱	AV 5.25.46
	7440-02-0	Nickel	2.3-1.9		5 -
	7782-49-2	Selenium_	4.9-3-A	<u> </u>	P P P P
		Silver	1./-0.86	<u>u</u>	15-1
	7440-28-0	Thallium	3.8 -3.8	ا	P_
			mly		
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1					
Comments:					
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			1			EPA	A SAMPLE N	10.
	47	NODCANIC A	NALYSES DATA S	HE	ET			
	4	NORDANIE	2.13.2.2.2.2.2	•			R1H	
					10 10		KIII	
Lab Name: ROY_F	WESTON IN	ic	Contract: 22			SD	3 No.: CO	MPRI'
	1M		SAS No.:	Tal	h Sampl	e Il	D: 9602L90	54-005
Matrix (soil/wa	ter): WATER	₹		Da	te Rece	ive	d: 02/07/	96
Level (low/med)		_						
a calide:	0.0)						
0	tration	Units (ug/	L or mg/kg dry	7 W	eight):	UG.		
Cor	iceliciacio					— _I		
			Concentration	c	Q	M		
	CAS No.	Analyte	Couceucracion		~	1	•	
		3-timony		-		NR		
	7440-36-0	Antimony_ Arsenic				NR		
	7440-38-2	Barium				NR		
ı	7440-39-3 7440-41-7	Beryllium		_		NR		
	7440-43-9	Cadmium		_		NR NR		
	7440-47-3	Chromium_		-		NR		
	7439-92-1	Lead	0.05 0.00017	-	7	AV	E3.28.96	
	17439-97-6	Mercury	0.05	-	<u></u>	NR	•	
	7440-02-0	Nickel		-		NR		
		Selenium_ Silver				NR	•	
	7440-22-4	Thallium_	·			NR		
	7440-28-0	1110111						
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Color Before:		Clar	ity Before: ity After:		_	Ar	tifacts:	
Color After:		CIAT	Try Micer.					
Comments:								

			1	********	EPA SAMPLE NO.
	I	NORGANIC A	NALYSES DATA S	HEET	
	. -	•			R1K
Lab Name: ROY F	WESTON IN	ic	Contract: 22	81-12-12	SDG No.: COMPRI
Lab Code: WESTO Matrix (soil/wa	ter): WATER		SAS No.:	Tah Samp	e ID: 9602L964-004 eived: 02/07/96
Level (low/med) % Solids:	0.0	วี			. VIC
Con	centration	Units (ug/	/L or mg/kg dry	weight):	: UG
	CAS No.	Analyte	Concentration	C Q	M NR
	7440-36-0	Antimony_			NR NR
	7440-38-2	Arsenic		_	NR
	7440-39-3	Barium		-	NR
	7440-41-7	Beryllium		-	NR
	7440-43-9	Cadmium		-	NR
	7440-47-3	Chromium_		-	ND
	7439-92-1	Lead	0.09 0.00036	- 3	AV \$.28.96
	7439-97-6	Mercury	0.09 0.00030	1-1 	NR
	7440-02-0	Nickel		-	NR
	7782-49-2	Selenium_		-	NR
	7440-22-4	Silver		-	NR
	7440-28-0	Thallium_		-	·
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Color Before:		Clar	ity Before:		Texture:
Color After:		CLUL			
Comments:					
 					
					
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1 INORGANIC ANALYSES DATA SHEET

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EPA	SA	MPL	L N	v.

		INORGANIC A	ANALYSES DATA	DUEET	· ———	 1
					R2B	
		NO.	Contract: 22	281-12-12		
Name: ROY_	FWESTON_I	NC.	SAS No.	•	SDG No.: C	OMPR1
Code: WEST		se No.:		Lab Sample	e ID: 9602I	964-01
rix (soil/W	ater): WATE	K		Date Rece	ived: 02/07	/96
el (low/med): LOW			54.00 1.000		
olids:	´o .	U				
0-		Unite (ua	/L or mg/kg dry	<pre>veight):</pre>	UG	
Co	ncentracion			· • ·	1	
	CAS No.	Analyte	Concentration	C Q	м	
				2012 140	_	
	7440-36-0	Antimony_	4.5 4.4	U 2/23/96	P_ P_	
	7440-38-2	Arsenic	3,3330	U	<u> </u>	
	7440-39-3	Barium	0.24 0.27	_	P	
	7440-41-7	Beryllium	0.0/0.910	U	P_	
	7440-43-9	Cadmium	1.30 -0/.27	ע	P_	
	7440-47-3	Chromium_	1.82-0.74		P_	
		Lead	3.6 -3.3	<u></u> 	P P S	
	7439-92-1	Mercury_	0.54_0.0010	UK	AVIE	
		Nickel	11/37		P_ P_ P_ P_	
	1 , 3 3 4 4 4 4		7 7	<u></u> 	P	
		Selenium_	0 / 2 9 40	ŭ	P	
		Silver	- 27.5	"	P	
	7440-28-0	Thallium_	1-3-0		•	
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r Before:		Clari	ty Before: ty After:		Texture: Artifacts:	
or After:		Clari	ty Alter:		Artifacts.	
ents:						
nments:						

•	-	NODCANTO A	1 Analyses data s	HE	ET	EP	A SAMPLE NO.
	-	MORGANIC					R2H
Lab Name: ROY H Lab Code: WESTO Matrix (soil/wa Level (low/med) % Solids:	ater): WATER LOW0.0	se No.: R	Contract: 22 SAS No.:	La Da	b Sampl te Rece	le I eive	G No.: COMPR1 D: 9602L964-015 d: 02/07/96
Cor	ncentration	Units (ug/	I OI mg/ kg ull	· ·		I	
	CAS No.	Analyte	Concentration	С	Q	M	
	7440-38-2	Antimony_ Arsenic_		_ _ _		NR NR NR	
	7440-39-3 7440-41-7 7440-43-9	Barium_ Beryllium Cadmium_		-		NR NR NR	
	7440-47-3 7439-92-1 7439-97-6	Chromium_ Lead_ Mercury	0.05_0.00023	- - -	<u> </u>	NR AV	E>.23.96
	7440-02-0 7782-49-2 7440-22-4	Nickel Selenium_		 -		NR NR NR	
	7440-28-0	Thallium_		=		NR —	
				=			
				=			
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				-			
				- -			
Color Before: Color After:		Clari Clari	ty Before:				xture:
Comments:							

EPA	SAMPLE	NO.
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	7	NORGANIC A	NALYSES DATA S	HEET	
	•				R2K
Lab Name: ROY_F Lab Code: WESTO Matrix (soil/wa Level (low/med) % Solids:	ater): WATER	se No.:	Contract: 22 SAS No.:	Lab Sampl	SDG No.: COMPR1 e ID: 9602L964-014 ived: 02/07/96
g Solius:			L or mg/kg dry	weight):	UG
Cor		011105 (49)			
	CAS No.	Analyte	Concentration		M NR
Color Before: Color After:	7440-39-3 7440-41-7 7440-43-9 7440-47-3 7439-92-1	Arsenic_Barium_Beryllium_Cadmium_Chromium_Lead_Mercury_Nickel_Selenium_Silver_Thallium_	C.21_0.00054 C.21_0.00054 Ty Before: ty After:		NR N
Comments:					
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			1 Analyses data s	ਾਤਕਸ਼	EPA SAMPLE NO.
	,	INORGANIC A	ANALISES DATA S	1111111	202
			orntmosts 22	01_12_12	R3B
Tab Code: W	l/water): WATE med): LOW0.	se No.: R 0		Lab Sampl Date Rece	SDG No.: COMPR1 Le ID: 9602L964-018 Eived: 02/07/96
	Concentration	Units (ug,	/L or mg/kg dry	weight):	: UG
	CAS No.	Analyte	Concentration	c o	м .
		Antimony_	4.0 4.4	U PROPU	P
	7440-38-2	Arsenic	3, 3, 3,0	U - / -	P
	7440-39-3	Barium	0.22 9.20	[
	7440-41-7	Beryllium	0.010		5 _
	7440-43-9	Cadmium	0.30 0.27	<u>u</u>	P_ P_ P_ P_ P_ AV \$5.23.96
	7440-47-3	Chromium_	0.59		5 _
	7439-92-1	Lead	3.0 -3.3	<u> </u>	277 65 - 66
	7439-97-6	Mercury		U 2	P 2.18 75
		Nickel	0.00 0.79		[5 -
		Selenium_	3.7	[빞	P_ P_ P_
	7440-22-4	Silver		<u>u</u> ——	-
	7440-28-0	Thallium_	3.3	<u> </u>	P_
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Color After	:	Clari	ty After:	-	AI CII GOCO.
Comments:					•
					
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1 TNORGANIC ANALYSES DATA SHEET

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		INORGANIC A	MALISES DAIR S	11111	· ·
					R3H
			Contract: 22	81-12-12	
ab Name: ROY_F	weston_i	NC.	SAS No.:		SDG No.: COMPRI
L CARA WEST	IN Ca	<u> </u>		Tab Sampl	e ID: 9602L964-020
atrix (soil/Wa	ater): WAIE	R		Date Rece	ived: 02/07/96
evel (low/med)					
solids:	0.				
0	tration	Units (ug/	/L or mg/kg dry	<pre>veight):</pre>	UG
COI	iceliciación.				 1
		2	Concentration	c Q	M
	CAS No.	Analyte	COHOCHUZ		
		Antimony_			NR
	7440-36-0	Arsenic_			NR
	7440-38-2	Barium			NR
	7440-39-3	Barrum			NR
	7440-41-7	Beryllium		-	NR
	7440-43-9	Cadmium			NR
	7440-47-3	Chromium_		-	NR
	7439-92-1	Lead		- 	AV 23.23.96
	17439-97-6	Mercury	0.03 0.00012	- -	NR 3.25° (0
	7440-02-0	Nickel		_	
•	7782-49-2	Selenium_		_	NR
					NR
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	7440-28-0	111011110			l <u></u>
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lor Before:		CIGII	ity After:		Artifacts:
lor After:		Clari	rcy wreer.		·
mments:					
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_	-	NODCANIC A	1 NAIVSES DATA S	HE	EET	EP	A SAMPLE NO.		
INORGANIC ANALYSES DATA SHEET R3K Lab Name: ROY F. WESTON INC. Contract: 2281-12-12 Lab Code: WESTON Case No.: SAS No.: SDG No.: COLLAB Sample ID: 9602L9									
Matrix (soil/Wa Level (low/med) % Solids:	Lab Sample ID: 9602L964-019 1/water): WATER med): LOW								
Cor	ncentration	Units (ug/	L or mg/kg dry	7 1	weight)	UG	·		
·	CAS No.		Concentration	C	Q 	M	· 		
	7440-36-0	Antimony_		_		NR NR			
:		Arsenic		_		NR			
	7440-39-3	Barium		-		NR			
	7440-41-7	Beryllium		 	l	NR			
	7440-43-9	Cadmium		_		NR			
	7440-47-3	Chromium_		-		NR			
	7439-92-1	Lead		77		ΔV	E5.23.96		
	7439-97-6	Mercury	0.12 0.00030	١	2	NR	3 22		
	7440-02-0	Nickei		-		NR			
	7782-49-2	Selenium_ Silver		-		NR			
	7440-22-4	Thallium_		-		NR			
	7440-28-0	Thattium_		-					
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Color Before: Color After:		Clari Clari	ty Before:	-	-		xture:		
Comments:									

1 TNORGANIC ANALYSES DATA SHEET

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		INORGANIC A	ANALYSES DATA S	SHEET	1
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DOV	т местои т	NC.	Contract: 22	281-12-12	
ab Name: ROY ab Code: WEST	L. MESION L	se No.:	SAS No.		SDG No.: COMPRI
ib Code: WEST	ON CA	D		Tab Samp	le ID: 9602L964-010
trix (soil/w): LOW	N.		Date Rece	eived: 02/07/96
evel (low/med	0.	⊼			
Solids:	0.	U			
Co	ncentration	Units (ug	/L or mg/kg dry	y weight):	: UG
	1	T			Γ-1
	CAS No.	Analyte	Concentration	C Q	M
	1			_	555
	7440-36-0	Antimony			NR
	7440-38-2	Arsenic		ll	NR
		Barium			NR
		Darium_	· · · · · · · · · · · · · · · · · · ·		NR
	7440-41-7	Beryllium		-	NR
		Cadmium		I – I – – – I	
	7440-47-3	Chromium_		_	NR
	7439-92-1	Lead		_	NR S
		Mercury_	0.02 0.00010	ਹ ₹	AV 2.23.96
		Mercury	<u> </u>		NR
	7440-02-0	Nickel		-	NR
		Selenium_			
	7440-22-4	Silver		_	NR
	7440-28-0	Thallium			NR
	7440-20 0				
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or Before:		Clari	ty Before:		Texture:
			ty After:		Artifacts:
or After:		Clair	Ly Alter.		
ments:					•
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			1		EPA SAMPLE NO.
	I	NORGANIC A	NALYSES DATA S	HEET	·
Lab Name: ROY_F Lab Code: WESTO Matrix (soil/wa Level (low/med) % Solids:	ter): WATER	<u> </u>		Lab Samplo Date Rece	SBH SDG No.: COMPR1 e ID: 9602L964-008 ived: 02/07/96
Cor	ncentration	Units (ug/	/L or mg/kg dry	weight):	
	7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-47-3 7439-92-1 7439-97-6 7440-02-0 7782-49-2	Analyte Antimony Arsenic Barium Beryllium Cadmium Chromium Lead Mercury Nickel Selenium Silver Thallium	Concentration 5.8 4.4 3.7 3.0 0.010 0.010 0.010 0.040 0.027 0.040 0.02		M P P P P P P P P P P P P P P P P P P P
Color Before:		Clar	ity Before:		Texture:
Color After:		Clar	ity After:		
Comments:					

	SAMPLE	NΩ
EPA	SAMPLE	NO.

	TNORGANIC A	ANALYSES DATA S	HEET		
				SBK	
Matrix (soil/water): WA Level (low/med): LO & Solids:	TER W 0.0	Contract: 22 SAS No.: /L or mg/kg dry	Lab Sampl Date Rece	SDG No.: COMPR1 e ID: 9602L964-009 ived: 02/07/96	•
Concentrati	on Units (ug)	, 1 O1 mg/ 119 1		<u> </u>	
CAS No.	Analyte	Concentration		м	
7440-38- 7440-39- 7440-41- 7440-43- 7440-47- 7439-92- 7439-97- 7440-02-	Barium_ Beryllium Cadmium_ Chromium_ Lead_ Mercury_ Nickel_ Selenium_ Silver_	O.C7_0.00030		NR NR NR NR NR NR NR NR NR NR	(
Color Before:	Clari	ty Before:		Texture:	-
Color After:	Clari	ty After:		Artifacts:	-
Comments:				·	

2A INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: ROY_FWESTON_INC	Cont	ract: 2281-12-	12
	o.: SAS	No.:	SDG No.: COMPR1
Lab Code: WESTON Case N	o.:		
Initial Calibration Source:			
Continuing Calibration Source:	IV		

Concentration Units: ug/L

		-							1
Analyte	Initia True	l Calibra Found	tion %R(1)	True	Continuir Found	*R(1)	round	%R(1)	M
Antimony Arsenic Barium Beryllium Cadmium Chromium Lead Mercury Nickel Selenium Silver Thallium			101.0	3000.0 10000.0 5000.0 250.0 250.0 500.0 2500.0 10000.0 10000.0	5.07 2030.12 10498.98	99.2 96.8 106.3 101.2 103.0 101.4 101.5 105.0 101.0	3182.71 10478.21 4938.65 241.02 263.19 503.77 2551.48 5.01 2005.61 10465.59 502.18 10380.05	104.8 98.8 96.4 105.3 100.8 102.1 100.2 100.3 104.7	P P P P P P P P P P P P P P P P P P P
	. .	I	-	_	-,				

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115 FORM II (PART 1) - IN

2A INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Nam	b Name: ROY_FWESTON_INC			Contract:	2281-12-12			
	le: WESTON		No.:	SAS No.:		SDG 1	No.:	COMPR1
Initial	Calibration	n Source:	IV					
continu	ing Calibrat	tion Source:	IV					

Concentration Units: ug/L

Analyte	Initia True	l Calibr	ation %R(1)	True	Continui: Found	%R(1)	bration Found	%R(1)	M
Antimony_Arsenic_Barium_Beryllium Cadmium_Chromium_Lead_Mercury_Nickel_Selenium_Silver_Thallium_				3000.0 -10000.0 -5000.0 -250.0 -250.0 -500.0 -500.0 -10000.0 -10000.0	3082.47 10154.76 5073.14 241.43 256.59 504.57 2538.40 4.82 2016.31 10104.37 499.60 9968.31	96.4 100.8 101.0 _99.9			

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115 FORM II (PART 1) - IN

CRDL STANDARD FOR AA AND ICP

Lab Name: ROY_FWESTON_INC	Contract: 2281-12-12
Lab Code: WESTON Case No.:	SAS No.: SDG No.: COMPR1
AA CRDL Standard Source: HIGH PURITY_	
ICP CRDL Standard Source: HIGH PURITY_	

Concentration Units: ug/L

Antimony Arsenic	Analyte	CRDL S	Standard fo	or AA %R	True		% R	Final Found	₹R
	Antimony_ Arsenic_ Barium_ Beryllium Cadmium_ Chromium Lead_ Mercury_ Nickel_ Selenium Silver_ Thallium_				200. 10. 10. 20. 100. 80. 400. 20.	0 380.33 0 191.73 0 9.24 0 11.32 0 17.72 0 102.09 0 74.62 0 407.62 0 16.76	-95.1 -95.9 -92.4 113.2 88.6 102.1 -93.3 101.9 83.8	0.00 0.00 0.00 0.00 0.00	0.0 0.0 0.0 0.0 0.0 0.0

FORM II (PART 2) - IN

2B CRDL STANDARD FOR AA AND ICP

Lab Name: ROY_FWESTON_INC	Contra	ct: 2281-12-1	L2
		·:	SDG No.: COMPR1
AA CRDL Standard Source: HIG	H PURITY_		
TOD ORDI Standard Source: HIG	H PURITY		

Concentration Units: ug/L

CRDL Standard for AA Analyte True Found %R CRDL Standard for ICP Initial True Found %R True Found %R CRDL Standard for ICP Initial Final True Found %R	
Allalyte	
Antimony	

FORM II (PART 2) - IN

3 BLANKS

Lab Name:	ROY_FWEST	ON_INC	Contract:	2281-12-12	2	
Lab Code:	WESTON	Case No.:	SAS No.:		DG No.:	COMPR1
		rix (soil/water)				
Preparation	on Blank Con	centration Units	(ug/L or mg/kg): UG		

Analyte	(-9/ -/	С	1	C	-	at c	ion 3	С	Prepa- ration Blank C	M
Antimony_Arsenic_Barium_Beryllium_Cadmium_Chromium_Lead_Mercury_Nickel_Selenium_Silver_Thallium_	29.6 1.8 0.1 2.7 4.6 32.7 0.1 7.9 34.3 8.6		29.6 1.8 0.1 2.7 4.6 32.7 0.1 7.9 34.3	ממממממממממ	29.6 —1.8 0.1	ממממממממממ			29.600 U 1.800 U 0.100 U 2.700 U 4.600 U -35.024 0.100 Ū 7.900 U 34.300 U 8.600 U	P P P P P P P P P P P P P P P P P P P

3 BLANKS

Tab	Name:	ROY_FW	VESTON_INC	Contract: 2281-12	-12
		WESTON		SAS No.:	SDG No.: COMPR1
			<pre>Matrix (soil/water):</pre>		
5		m Blank	Concentration Units (ug	/L or mg/kg):	-

-	Initial								Dwans		
	Calib.	- 1	Conti	nı	ing Calibr	at	ion		Prepa- ration		1 1
	Blank	- 1		Bl	ank (ug/L)				Blank	c	M
		cl	1	C	2	C	3	C	Brank	4	m
Analyte	(ug/L)	٦	•	_				_			
		╤.	43.5	บ		T				_	P
Antimony_		<u></u>		U		-1				_[P
Arsenic		ט	29.6_ 1.8_	U		-1		-		_	P
Barium		U		מ		-1		-			P
Beryllium		ט	0.1_			-1		-		-1	P
Cadmium		ַ	2.7	Ŭ		-1		-		-	P
Chromium		ט	4.6	U		-1		-		-	P
Lead	32.7	U	32.7	U		-		-		-	AV
Mercury			0.1_	U		-1		-		-	P
Nickel	7.9	ਹ	-8.0	_						-1	P
Selenium_	-42.2		34.3	ប៊		_		 -		-1	P
Silver	8.6	บิ	8.6	U		_		-		-1	P-
Thallium	30.1	Ū	$\frac{3}{30.1}$	U		_		 		-	1
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ICP INTERFERENCE CHECK SAMPLE

T.ah	Name:	ROY_FWESTO	N_INC	Contract: 2281	-12-12	
		WESTON		SAS No:	SDG No.:	COMPR1
		ber: IC3		ICS Source: IV		,

Concentration Units: ug/L

Analyte	True Sol. Sol. A AB		Ini Sol.	tial Found Sol. AB	\%R	Final Found Sol. Sol. A AB %R					
Analyte Antimony_ Arsenic_ Barium_ Beryllium Cadmium_ Chromium_ Lead_ Mercury_ Nickel_ Selenium_ Silver_ Thallium_				AB 1048.4 974.9 478.9 461.3 997.9 464.7 968.7 902.8 910.6 1048.4 1017.3	104.8 97.5 -95.8 -92.3 -99.8 -92.9 -96.9 -90.3		1038.0 939.3 489.8 469.1 1005.6 470.8 947.4 916.3 899.4 1065.9 983.1	103.8 93.9 98.0 93.8 100.6 94.2 94.7 			

FORM IV - IN .

5A SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

~+~i~·	WATER or Sample	Case No.: ::0.0 :ation Units (ug/			rel (low/med)		 1	
Analyte Antimony Arsenic Barium Beryllium Cadmium Chromium Lead Mercury Nickel Selenium Silver Thallium	80-120_	Spiked Sample Result (SSR)	c	Sample Result (SR)	Spike Added (SA)	*R	 M IN	5.2 5.2

5A SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

Lab Name: Lab Code: Matrix: % Solids f	WESTON WATER or Sample	Case No.: _		SAS No.:	Lev	SDG No. rel (low/med)	: COMPR : LOW_	1		
Analyte Antimony_ Arsenic_ Barium_ Beryllium_ Cadmium_ Chromium_ Lead_ Mercury_ Nickel_ Selenium_ Silver_ Thallium_ Comments:	Control Limit %R	Spiked Sample Result (SSR) O.36 O.0011	C	Sample Result (SR)	c 	Spike Added (SA)	\$R	- - - -	M NR	62
		₽/	1DM	V (Part 1) -	TN					

5A SPIKE SAMPLE RECOVERY

ab Code: W	ESTON NATER or Sample	Case No.: :0.0 ration Units (ug)			ev	SDG No. el (low/med)	: COMPR	RI	. 1	
Analyte	Control Limit	Spiked Sample Result (SSR)		Sample Result (SR)	С	Spike Added (SA)	%R	Q	м	
Antimony_ Arsenic_ Barium_ Beryllium Cadmium_ Chromium_ Lead_ Mercury_ Nickel_ Selenium_ Silver	80-120_	<u> 4.4 -0.0091</u>					90.7		NR NR NR NR NR NR NR NR NR NR NR NR NR N	E) 2:2:
Thallium_			-					-		
Comments:			-1-	V (Part 1) - 3	- I -					

5A SPIKE SAMPLE RECOVERY

Lab Code: W	Lab Name: ROY_FWESTON_INC Contract:2281-12-12 R2BT Lab Code: WESTON Case No.: SDG No.: COMPR1 Level (low/med): LOW Solids for Sample:0.0 Concentration Units (ug/L or mg/kg dry weight): UG										
Analyte	Control Limit %R	Spiked Sample Result (SSR)	С	Sample Result (SR)	c	Spike Added (SA)	%R		M NR NR		
Antimony Arsenic Barium Beryllium Cadmium Chromium					_ _ _ _			-	NR NR NR NR NR		
Lead Mercury Nickel Selenium Silver	80-120_	<u>4.7</u> <u>0.0087</u>	- - - -	<u>c.54</u> <u>0.0010</u>	<u></u>	0.01	87.0		AV NR NR NR NR		
Thallium_			 - - -		 - - - -			 - - -			
								- - - -			
Comments:		FOI		V (Part 1) - :	IN			<u>_</u>			

5A SPIKE SAMPLE RECOVERY

Lab Code: W Matrix:W % Solids fo	ESTON NATER or Sample	Case No.: :0.0 ration Units (ug/			<u>Le</u> v	SDG No.	: COMPF : LOW_	1	.	
Analyte Antimony_ Arsenic_ Barium_ Beryllium Cadmium_ Chromium_ Lead_ Mercury_ Nickel_ Selenium_ Silver_ Thallium_ Comments:	Control Limit %R 80-120_	Spiked Sample	C	Sample	c	Spike Added (SA)	\$R	- -	M NR	
		FOR	M	V (Part 1) - I	N			_		

5A SPIKE SAMPLE RECOVERY

Lab Code: WE Matrix:WA % Solids for	STON TER Sample	STON_INC Case No.: :0.0		SAS No.:	еv	SDG No.	2KT : COMPF : _LOW	RI	_	
Analyte Antimony Arsenic Barium Beryllium Cadmium Chromium Lead	Concentr Control Limit %R	Spiked Sample Result (SSR)		Sample Result (SR)	c	Spike Added (SA)	\$R	Q	M NR	53 PA
		FOR	v	V (Part 1) = 1	N			_		

6 DUPLICATES

EPA SAMPLE NO.

		Contract: 2281-	1010	R1HD		
Lab Name: ROY_FWESTO	N_INC					
Lab Code: WESTON	Case No.:	SAS No.:		SDG No.:	COMPR1	
			Level	(low/med):	_LOW	
Matrix (soil/water):	WATER			·		
% Solids for Sample:	0.0	% Solid	as for	Duplicate:	0.0	

Concentration Units (ug/L or mg/kg dry weight): UG____

	MCCHULUE					— т	Т		
Analyte	Control Limit	Sample (S)	С	Duplicate (D)	С	RPD	Q _	M	
Antimony_ Arsenic_ Barium_ Beryllium Cadmium_ Chromium					_	22.2	11111	NR NR NR NR NR NR NR	æ,
Lead Mercury Nickel Selenium_ Silver Thallium_		<u>0.05</u> 0.0002		<u> </u>	- - - -	25.4 19.4	- - - -	AV NR NR NR NR	2.13.7
			_ _ _ _		- - - -		 - - -		
			- - - -		_ _ _				

6 DUPLICATES EPA SAMPLE NO.

R2BD	•
R2BU	

r a b	Name.	ROY_FWESTO	N INC	Contract:	2281-12-12	l		
Lab	Name.	VO1_1		SAS N	0.:	SDG No	. :	COMPR1
			Case No.:	יו כעכ	···			

Lab Code: WESTON Case No.: ____ Level (low/med): _LOW__
Matrix (soil/water): WATER

Concentration Units (ug/L or mg/kg dry weight): UG____

			11		H	ļ	1		
Analyte	Control Limit	Sample (S) C		Duplicate (D)	2	RPD	Q -	M NR	
Antimony_ Arsenic_ Barium_ Beryllium Cadmium_ Chromium_					-			NR NR NR NR NR NR	C33.91
Lead		0.54 0.0010	- - -	<u>0.54</u> 0.0010	<u></u>		-	AV NR NR NR NR	
Thailium_			-		- - -		-		
			- - -				-		
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			- - -		_ _ _ _				

6 DUPLICATES

EPA	SAMP	LE NO.
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R2KD

	0	2221-12-1	2	
Lab Name: ROY_FWESTON_INC	Conti	ract: 2201-12 1		
Lab Code: WESTON Case No.:	_	SAS No.:	SDG No	.: COMPR1
Matrix (soil/water): WATER		Leve	l (low/me	d): _LOW
		% Solids fo	~ Dunlica	to• 0.0
% Solids for Sample:0.0		4 S01145 10	or Dupired	
Concentration Units (ug/L	or mg,	/kg dry weight)	: UG	·
Analyte Control Limit Sample (S) Antimony Arsenic Barium	c	Duplicate (D)	C RPD	Q M NR - NR - NR
Beryllium	_ _ .		-	- - NR NR
Cadmium	-			- - NR
Chromium			10.0	NR S
Mercury 5.21 0.000	05 _	0.19 -0.0005	5.7	AV 2.23.44
Nickel	_ .		-11	$- - _{NR}^{NR} $
Selenium	- •		-	- - NR
Silver	-			NR
Thairium_				
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IABORATORY CONTROL SAMPLE

Lab Name: ROY_FWES	STON_INC	Contract:	2281-12-1	2	
Lab Code: WESTON	Case No.:	SAS No.:		SDG No.:	COMPR1
Solid LCS Source:					
Amoone ICS Source:	IV			•	

Arsenic 10000.0 -9726.96 -99.7 -99.7 -99.7 -99.7 -99.5 -99.5 -99.5 -99.5 -99.2 -99.2 -99.3 -99.2 -99.3 -99.2 -99.3	Analyte	Aque True	ous (ug/I Found	4) %R	True	Solid Found C	l (mg/kg) Lim	its	&R
Silver 500.0 492.87 98.6 97.1	Antimony Arsenic_ Barium_ Beryllium Cadmium_ Chromium_ Lead_ Mercury_ Nickel_ Selenium	T0000.0 _5000.0 _250.0 _250.0 _500.0 _2500.0 _2000.0	9726.98 4986.73 236.44 248.87 495.94 2457.99 1965.75 9765.65	97.3_ 99.7_ 94.6_ 99.5_ 99.2_ 98.3_ 98.3_ 97.7_					
	Silver_ Thallium_	500.0	492.87	⁻ 98.6_					

LABORATORY CONTROL SAMPLE

Lab Name: ROY_FWES	STON_INC	Contract: 2281-12	
Lab Code: WESTON	Case No.:	SAS No.:	SDG No.: COMPRI
Solid LCS Source:			
ICC Source:	TV		

					<u> </u>
Analyte	Aqueous (ug/L) True Found %R	True	Solid Found C	(mg/kg) Limi	ts %R
Antimony_ Arsenic_ Barium_ Beryllium Cadmium_ Chromium_ Lead_ Mercury_ Nickel_ Selenium_ Silver_ Thallium_	3000.0				

7 LABORATORY CONTROL SAMPLE

ab Name: ROY_FWESTON_INC	Contract: 2281-1	2-12
Lab Code: WESTON Case No.:	SAS No.:	SDG No.: COMPR1
Solid LCS Source:		
Among ICS Source: TV		

				·				
Analyte	Aque True	eous (ug/I Found	4) %R	True	Solic Found	i (mg/kg) C Lin	nits	₹R
Antimony Arsenic Barium Beryllium Cadmium Chromium Lead Mercury Nickel Selenium Silver Thallium	5.0	4.87	97.4_					

7 LABORATORY CONTROL SAMPLE

Lab Name: ROY_FWES	STON_INC	Contract: 2281-12	
		SAS No.:	SDG No.: COMPRI
Lab Code: WESTON	Case No.:		,
Solid LCS Source:			
Aqueous LCS Source:	IV		

Antimony Arsenic Barium Beryllium Cadmium Chromium Lead Mercury Nickel Selenium Silver Thallium	Analyte	Aque True	ous (ug/L Found	%R	True	Soli Found	d C	(mg/kg) Lim	its	₹R
Barium Cadmium Chromium Lead Mercury Nickel Selenium Silver Thallium	Antimony						-			
Sarium Cadmium Chromium Lead Mercury Vickel Selenium Silver Thallium	rsenic						-			
Chromium lead fercury 5.0 4.95 99.0	Rarium						-			
Chromium Lead Mercury 5.0 4.95 99.0 Sickel Selenium Silver Challium	Servilium						-1			
Chromium Lead Mercury 5.0 4.95 99.0 Sickel Selenium Silver Challium	admium						-			
Gead	chromium						-			
Mercury (ickel Selenium Silver Thallium Silver Silver Selenium Silver Selenium Silver Selenium Seleniu	Pad						-			
Nickel Selenium Silver Thallium Selenium Seleniu	fercury	5.0	4.95	_99.0_			-			
Selenium Silver Thallium	lickel						-1			
Silver Fhallium	Selenium						-			
Thallium	Silver						-			
	hallium						-			
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8 STANDARD ADDITION RESULTS

Lab	Name:	ROY_FWEST	ON_INC	 Contract: 2281-12-12	2
		WESTON	Case No.:	SAS No.:	SDG No.:COMPRI

Concentration Units: ug/L

			_								<u> </u>
EPA Sample No.	An	0 ADD ABS	1 AI CON	DD ABS	2 AI CON	DD ABS	CON CON	ABS	Final Conc.	- r	Q —
	=										
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10 Instrument Detection Limits (Quarterly)

Lab Name: ROI F. WESTON INC. INC. ICP ID Number: IC3 Flame AA ID Number:	SAS No.:	2281-12-12 01/01/96	SDG No.:	COMPR1
Flame AA ID Number .				
Furnace AA ID Number :				

Analyte Antimony_ Arsenic_ Barium_ Beryllium Cadmium_ Chromium_ Lead_ Mercury_ Nickel_ Selenium_ Silver_ Thallium_	Wave- length (nm) 206.80 193.60 493.40 313.00 228.80 267.70 220.30 231.60 196.00 328.00 276.80	Back- ground	CRDL (ug/L)	IDL (ug/L)	M P P P P P P P P P P P P P P P P P P P

Comments:	
	

10 Instrument Detection Limits (Quarterly)

					1
Analyte	Wave- length (nm)	Back- ground	CRDL (ug/L)	IDL (ug/L)	M NR
Antimony_					NR-
Arsenic					NR_
Barium_ Beryllium					NR_
Cadmium					NR_ NR
Chromium					NR-
Lead	-000 30			0.1	AV_
Mercury Nickel	_220.30_				NR_
Selenium_					NR_ NR
Silver					NR_
Thallium_					
<u> </u>					
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man and the same a	
Comments:	

11A ICP Interelement Correction Factors (Annually)

ab Code: V	VESTON Coer: IC3	Case No.:	SAS No Date:	07/01/9		: COMPR1
CP 1D Num	per: IC3					
	Wave-	In	nterelement (Correction 1	Factors for	
Analyte	length (nm)	Al	Ca	Fe	Mg	AS_
Antimony_ Arsenic	_206.80 _193.60 _493.40	0.0000000 -0.0043760 -0.0000000	_0.0000000_	-0.0000000 -0.0001600 -0.0000000	_0.0000000 _0.0000000	_0.0000000 _0.0000000
Barium Beryllium Cadmium	_313.00 _228.80	-0.0000000 -0.0000000 -0.0000000	_0.0000000_	-0.0000000 -0.0000000	_0.0000000 _0.0000000	_0.0145340 _0.0000000
Chromium_ Lead Mercury	_267.70 _220.30	0.0000000	0.0000000	0.0000000	_0.0000000	0.0000000
Nickel Selenium_ Silver	_231.60 _196.00 _328.00	-0.0000000 -0.0000000 -0.0000000	-0.0000000 -0.0000000 -0.0000000	-0.0000000 -0.0001600		_0.0000000 _0.0000000 _0.0000000
Thallium_	_276.80 					
omments:						

FORM XI (Part 1) - IN

11B ICP Interelement Correction Factors (Annually)

	OY_FWESTON C	ase No.:		:	SDG No.:	COMPR1
	er: IC3		Date:	07/01/9	5	
	Wave-	I	nterelement Co	orrection F	actors for :	
	length				,	
nalyte	(nm)	NI_	V			
timony_	206.80	0.0000000	-0.0104600_			
senic	793.60	170.000000	0.0189000_			
rium	493.40	170 0000000	1 0.0000000 1			
ryllium	313.00_	0.0000000	0.0041940_			
dmium_	228.80	0.0000000	[_0.0000000_[
romium_	_267.70 <u></u>	1 0 0000000	0.0000000			
	220.30	0.0000000	_0.0000000_			
ad	-220.30	-	11.		-	
ercury_	231.60	0.0000000	0.0000000			
ckel	-231.00		_0.0000000_			
elenium_	_196.00	0.000000	[_0.0000000_			
lver	328.00		_0.0012300_			
nallium_	_276.80	-0.000000				
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mments:						
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FORM XI (Part 2) - IN

12 ICP Linear Ranges (Quarterly)

Lab	Name: ROY_FWESTON_INC	Contract:	2281-12-12
Lab	Code: WESTON Case No.:	SAS No.:	SDG No.: COMPR1
ICP	ID Number: IC3	Date:	01/01/96

Analyte	Integ. Time (sec.)	Concentration (ug/L)	M
Antimony_	3.30	120000.0	P
Arsenic_	3.30	100000.0	_P_
Barium	3.30	100000.0	_P_
Beryllium	3.30	5000.0	P
Cadmium	3.30	25000.0	_P_
Chromium	3.30	50000.0	_P_
_	3.30	250000.0	
Lead			-NR
Mercury Nickel	3,30	200000.0	-P
Selenium	3.30	100000.0	_P_
	3.30	10000.0	_P_
Silver Thallium	3.30	100000.0	
Thailium_			
		` 	
			<u> </u>
			

Comments:	
	FORM XII - IN

13 PREPARATION LOG

rab	Namo.	BOY F. WEST	ron_inc	Contract:	2281-12-12	
שט	Name.	7.0			SDC	No.:COMPR1
1-	ondo:	WESTON	Case No.:	SAS No.:		, 1101100111

Method: P_

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
			150
COMPR1	02/16/96		150
COMPR2	02/16/96		——150——
COMPR3	02/16/96		
COMPSB	1 AA /16 /06		150
LCSW122_	02/16/96 02/16/96 02/16/96 02/16/96 02/16/96 02/16/96 02/16/96		100
LCSW222	02/16/96		100
PBW122	02/16/96		100
PTRA	02/16/96		100
R2B	02/16/96		100
R3B	02/16/96		100
SBH	02/16/96		100
3611	-		
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FORM XIII - IN

13 PREPARATION LOG

Lab Name: ROY_F._WESTON_INC.____ Contract: 2281-12-12

Lab Code: WESTON Case No.: ____ SAS No.: ___ SDG No.:COMPR1

Method: AV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
COMPR1	02/19/96		33
COMPR2	02/19/96		33
COMPR3	02/19/96		33
COMPSB	02/19/96		33
LCSW195	02/19/96		33
LCSW295	02/19/96		33
	02/19/96		33
PBW195	02/19/96		33
PTRA	02/19/96		33
R1H			33
R1HD	02/19/96		33
R1HS	02/19/96		33
R1HT	02/19/96		33
R1K	02/19/96		33-
R2B	02/19/96		33
R2BD	02/19/96		33-
R2BS	02/19/96		33
R2BT	02/19/96		33
R2H	02/19/96		33
R2K	02/19/96		33-
R2KD	02/19/96		33
R2KS	_02/19/96		33
R2KT	_02/19/96		33
R3B	_02/19/96		
R3H	_02/19/96		33
R3K	_02/19/96		33_
SBB	02/19/96		33
SBH	_02/19/96		33
SBK	_02/19/96		33

FORM XIII - IN

14 ANALYSIS RUN LOG

Lab	Name:	ROY_	F.	_weston_	_INC	
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Contract: 2281-12-12

Lab Code: WESTON Case No.: ____

SAS No.: ____ SDG No.:COMPR1

Method: P_

Instrument ID Number: IC3_____

End Date: 02/19/96

Start Date: 02/19/96

EPA Sample No.					Γ_				_				- 7	An	al	yt	es								1
SO	Sample	D/F	Time	% R		. 1	1		- 1			- 1		- 1	- 1	١			_	_	_	_	_	_	-
_	No. SO S1A S1B S1 S2A S2B S2 STD1 STD2 ICB ICSAB CRI PBW122 LCSW122 LCSW222 SBH R2B R3B PTRA COMPR2 CCV CCB COMPR3 ICSAB CCV	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1424 1426 1429 1431 1433 1435 1442 1448 1450 1504 1506 1509 1513 1516 1519 1522 1530 1532 1535 1541		X	X -	X X X X X X X X X X X X X X X X X X X	XXXX - XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	X X X X X X X X X X X X X X X X X X X	XXXX -	XXXX		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	X -	XXXX -					_ _ _					

14 ANALYSIS RUN LOG

Lab Name: ROY_F._WESTON_INC.____

Contract: 2281-12-12

Lab Code: WESTON Case No.: _____

SAS No.: ____ SDG No.:COMPR1

Instrument ID Number: IC3_____

Method: P_

Start Date: 02/20/96

End Date: 02/20/96

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EPA Sample No.	D/F	Time	. % R	S	A	B A	B E	C D	C R	P B	H G	N I	S E	A G	T L							-			_	_	
No. SO SIA SIB SIB SI SSE SSE SSE SSTDI STD2 ICB ICSAB CRI COMPRI COMPSB ICSAB CCV CCB	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1851 1853 1855 1858 1900 1902 1904 1908 1911 1917 1919 1924 1930 1953 		- X	X	X	X	<u> </u>	<u> </u>	<u>xxxx</u> - <u>xxx</u> xxxxx		<u> </u>	<u>x</u> - <u>x</u> x x x x x <u>x</u> x x x x x x x x x x x	<u> </u>	<u>x xxxxxx xxxxx</u>												
									_	-	-		-	_	_	<u> </u>	-	_	<u>-</u>	<u> </u>	-	: -	: -	-	-	-	-

14 ANALYSIS RUN LOG

Lab Name: ROY_FWESTON_INC	Contract: 2281-12-12
Lab Code: WESTON Case No.:	SAS No.: SDG No.:COMPR1
Instrument ID Number: HG2	Method: AV

Start Date: 02/19/96 End Date: 02/19/96

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EPA Sample No.	D/F	Time	*	R	S	A S	B A	B E	CD	C R	P B	H G	N I	S E	A G	T							-
	D/F	Time 1531 1534 1536 1539 1542 1545 1554 1556 1559 1602 1605 1610 1613 1616 1621 1624	*	R	SB	AS	B A 	BE	CD	CR	PB	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	N I	SE	A G 	TL							
CCV CCB SBK SBB R2B R2BD R2BS R2BT R2K R2KD R2KS R2KT	1.00 1.00 3.00 1.00 10.00 10.00 10.00 3.00 3.00 3.00 3.00	1627 1630 1632 1635 1641 1643 1646 1649 1652 1654 1657					-	-			- - - - - - - - - -	X X X X X X X X X X X		-				 					

14 ANALYSIS RUN LOG

Lab Nam	e: ROY	_FWE	STON_IN	ic

Contract: 2281-12-12

Lab Code: WESTON Case No.: ____

SAS No.: _____ SDG No.:COMPR1

Instrument ID Number: HG2_____

Method: AV

Start Date: 02/19/96

End Date: 02/19/96

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EPA Sample No.	D/F	Time	ક	R	S B	A S	B A	B E	C D	C R	P B	H G	NI	S E	A G	T L							_
Sample	D/F	Time 1700 1703 1705 1708 1711 1714 1716 1719 1722 1724 1727 1730 1733		R	SB	AS	B A	BE		CR	PB	HG XXXXXXXXXXXX	ZH	» Н	∢ G	##							
							11111	1 1 1 1 1 1										 		 - - - -			



Raw Data



Metals by ICP

Mathod:	COE	Standa	rd: 50				
Elem	Ag3280	A13082	As1936	Ba4934	Be3130	Cd2288	Cr2677
Avge	.0200	.0513	.0300	.0047	.0947	.0027	.0173
SDev	.0144	.0372	.0275	.0050	.0042	.0061	.0145
%RSD	72.11	72.40	91.65	107.9	4.917	229.1	83.47
#1	.0240	.0340	.0540	.0040	.0380	0040	.0100
#2	.0040	.0260	.0000	.0000	.0860	.0040	.0340
#3	.0320	.0940	.0360	.0100	.0800	.0080	.0080
Elem	Fe2599	Ni2316	Pb2203	Sb2068	Se1960	T11908	V-2924
Avge	.0167	.0407	.0240	.0260	0087	0087	0060
SDev	.0220	.0767	.0191	.0561	.0314	.0248	.0171
%RSD	132.2		79.49	215.8	362.2	236.7	284.8
#1	0060	.1000	.0020	.0800	0440	0240	0240
#2	.0380	.0680	.0360	.0300	.0020	.0200	0040
#3	.0180	0460	.0340	0320	.0160	0220	.0100
Elem Avge SDev &RSD #1 #2 #3	Zn2138 .0093 .0129 137.8 .0000 .0040 .0240	100	M	metroved,		219B IC	3-2
/	COE-HOT CEAS SW846	}			960	_ _ _	

Standardization Rpt.

Method:	COE	Standa	rd: S1A					
Elam Avge SDav %RSD	Ag3280 .9207 .0162 1.756	A13032 3.291 .023 .7123	Ba4934 23.93 .15 .6203	Be3130 15.41 .09 .5933	Cd2299 .5167 .0136 2.635	Cr2677 2.503 .016 .6408	Fe2599 37.23 .24 .6319	
#1 #2 #3	.9060 .9180 .9380	3.264 3.300 3.308	24.01 24.03 23.76	15.46 15.47 15.30	.5320 .5120 .5060	2.502 2.520 2.483	37.45 37.48 37.06	
Elem Avge SDev %RSD	Ni2316 14.99 .05 .3202	Pb2203 2.850 .042 1.474	Sb2068 10.26 .11 1.117	V-2924 10.79 .04 .3552	Zn2138 5.062 .026 .5167			
#1 #2 #3	14.94 14.99 15.04	2.880 2.802 2.868	10.16 10.23 10.39	10.81 10.81 10.74	5.080 5.074 5.032			

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Meth	od: COE	Standa	ard: S1B				
Ele Avç SDe %RS	re 1.809 ev .014	A13082 6.599 .058 .8755	Ba4934 49.91 .64 1.313	Be313C 31.34 .27 .8474	Cd2288 1:069 :026 2:441	Cr2677 5.056 .052 1.031	Fe2599 75.29 .64 .9493
#1 #2 #3	1.812 1.794 1.822	6.630 6.532 6.634	49.26 48.16 49.29	31.51 31.03 31.47	1.072 1.042 1.094	5.106 5.002 5.060	75.68 74.55 75.64
Ele Avg SDe %RS	re 30.07 v .17	Pb2203 5.753 .050 .8728	Sb2068 20.76 .20 .9403	V-2924 21.91 .20 .8940	Zn2138 10.25 .07 .6882		
#1 #2 #3	30.19 29.88 30.14	5.766 5.698 5.796	20.97 20.59 20.73	22.03 21.68 22.01	10.29 10.17 10.30		

Method:	COE	Standa	erd: S1				
Elem Avge SDev %RSD	Ag3280 3.585 .025 .6931	A13082 13.19 .1 .7350	B34934 97.26 .43 .4432	Be3130 62.32 .29 .4646	Cd2288 2.091 .001 .0552	Cr2677 9.903 .057 .5774	Fe2599 149.0 .6
#1 #2 #3	3.600 3.598 3.556	13.24 13.22 13.06	97.40 97.60 96.77	62.42 62.54 61.99	2.090 2.092 2.092	9.952 9.916 9.840	148.3 148.4 147.4
Elem Avge SDev %RSD	Ni2316 59.02 .31 .5258	Pb2203 11.26 .12 1.051	Sb2068 41.13 .18 .4481	V-2924 43.36 .18 .4132	Zn2138 20.27 .08 .4133		
#1 #2 #3	59.25 59.14 58.67	11.36 11.30 11.13	41.22 41.25 40.92	43.47 43.45 43.15	20.29 20.34 20.17		

Method:	COE	Standa	rd: SZA
Elem	As1936	Se1960	T11903
Avge	13.43	14.49	18.19
SDev	.15	.21	.28
%RSD	1.092	1.474	1.554
#1	13.42	14.62	18.17
#2	13.29	14.24	17.92
#3	13.59	14.61	_3.49

Method:	COE	Standa	rd: S2P
Elem	Az1936	5e1960	T11908
Avge	16.41	10.59	35.91
SDev	.15	.28	.35
&RSD	.5575	.9661	.9756
#1	26.32	23.42	25.31
#2	26.32	28.45	35.75
#3	26.58	28.91	35.67

Standardisation Rpt.

Method:	COE	Standard	! :	S2
Elem	As1936	Ee1960	7.5	1908
Avge	53.08	87.32		1.15
SDev	.40	.36		1.47
%RSD	.7567	.6210		3449
#1	52.63	56.92	72	61
#2	53.19	57.48		2.36
#3	53.41	57.58		2.47

Slope = Conc(SIR)/IR Mathod: CCE Date Standardize Low std Slope Y-intercept High sta Element Wavelen 02/19/96 00:29:13 Multiple Standards 278.957 -5.58934 Apadad 328.068 02/19/96 02:29:10 -38.5836 754.082 Multiple Standards 303.215 A13082 02/19/96 02:35:36 -11.534€ Standards 376.400 As1936 193.696 Multiple 02/19/90 02:20:13 103.169 -.303463 E=4934 493.409 Multiple Standards 02:20:10 8.29323 -.693637 Ee3130 313.042 Multiple Standards 02/19/96 02:29:13 238.918 Standards -.620792 C32288 228.802 Multiple 02/19/96 02:29:13 02/19/96 02:29:13 -1.74086 267.716 Multiple Standards 100.313 Cr2677 Standards 65.9932 -1.15682 Fe2599 259.940 Multiple -2.7714002/19/96 02:29:13 M12316 Multiple €7.0980 231.504 Standards Pb2203 220.353 02/19/96 02:29:13 442.299 -10.6247 Standards Multiple -3.72224 2.76479 02/19/96 02:29:13 144.568 Standards Sb2068 206.838 Multiple 02/19/96 02:35:36 347.766 196.026 Multiple Standards Se1960 02/19/96 02:35:36 2.19105 Standards 275.75€ T11908 190.864 Multiple 115.076 Standards .723887 02/19/96 02:29:13 V-2924 292.402 Multiple 99.2776 -.91704902/19/95 02:29:13 Standards In2138 213.856 Multiple

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- Mathod:	COE				D = = i A - : = 3
			Rhown	Measured	Rezidual
R'amant	Wavelength	Standard	Concentration	Concentration	Concentration
	328.068	20	.000000	010199	.010199 -1.23703
Ag3230	320.000	S1A	250.000	251.237	-1.23703
		S1B	500.000	499.137	.963251
	1	S1	1000.00	994.378	5.62170
	√	27	2000.00		
CorCoef:	1.0000		Known	Measured	Residual
			Concentration	Concentration	Concentration
Element	Wavelength	Standard		.125942	125942
A13082	308.215	S0	.000000	2442.85	57.1511
		S1A	2500.00		62.6475
		S1B	5000.00	4937.35	103.302
	/	S1	10000.0	9896.70	103.302
CorCoef:	0.99999 🗸				5
			Known	Measured	Residual
Element	Wavelength	Standard	Concentration	Concentration	Concentration
As1936	193.696	S0	. 200000	242593	.242593
AS1330	193.030	S2A	5000.00	5044.27	-44.2725
		S2B	10000.0	9928.44	71.5596
	/	S25	20000.0	19966.0	33.9707
		52	20000		
CorCoef:	0.99999		Known	Measured	Residual
		C+ 2 2	Concentration	Concentration	Concentration
Element	Wavelength	Standard	.000000	.175991	175991
Ba4934	493.409	SO	2500.00	2469.00	30.9976
		SIA		5045.19	-45.1929
		S1B	5000.00	10033.6	-33.6045
		S1	10000.0	10033.6	-33.0043
CorCoef:	0.99998				Dogiđual
			Known	Measured	Residual
Element	Wavelength	Standard	Concentration	Concentration	Concentration
Be3130		SO	.000000	.008524	008524
	313.042	20			
200100	313.042	S1A	125.000	127.100	-2.09958
203130	313.042	S1A		127.100 259.183	-9.18317
203200	313.042	S1A S1B	125.000	127.100	
		S1A	125.000 250.000	127.100 259.183	-9.18317
CorCoef:		S1A S1B	125.000 250.000 500.000	127.100 259.183	-9.18317
CorCoef:	0.99998	S1A S1B S1	125.000 250.000 500.000 Known	127.100 259.183 516.135 Measured	-9.18317 -16.1352 Residual Concentration
CorCoef: Element	0.99998 Wavelength	S1A S1B S1	125.000 250.000 500.000 Known Concentration	127.100 259.183 516.135 Measured Concentration	-9.18317 -16.1352 Residual Concentration
CorCoef:	0.99998	S1A S1B S1 Standard S0	125.000 250.000 500.000 Known Concentration .000000	127.100 259.183 516.135 Measured Concentration .010323	-9.18317 -16.1352 Residual
CorCoef: Element	0.99998 Wavelength	S1A S1B S1 Standard S0 S1A	125.000 250.000 500.000 Known Concentration .000000 125.000	127.100 259.183 516.135 Measured Concentration .010323 122.814	-9.18317 -16.1352 Residual Concentration 010323 2.18578
CorCoef: Element	0.99998 Wavelength	S1A S1B S1 Standard S0 S1A S1B	125.000 250.000 500.000 Known Concentration .000000 125.000 250.000	127.100 259.183 516.135 Measured Concentration .010323 122.814 254.856	-9.18317 -16.1352 Residual Concentration 010323 2.18578 -4.85628
CorCoef: Element Cd2288	0.99998 Wavelength 228.802	S1A S1B S1 Standard S0 S1A	125.000 250.000 500.000 Known Concentration .000000 125.000	127.100 259.183 516.135 Measured Concentration .010323 122.814	-9.18317 -16.1352 Residual Concentration 010323 2.18578
CorCoef: Element Cd2288	0.99998 Wavelength	S1A S1B S1 Standard S0 S1A S1B	125.000 250.000 500.000 Known Concentration .000000 125.000 250.000 500.000	127.100 259.183 516.135 Measured Concentration .010323 122.814 254.856 499.031	-9.18317 -16.1352 Residual Concentration 010323 2.18578 -4.85628 .969421
CorCoef: Element Cd2288 CorCoef:	0.99998 Wavelength 228.802	S1A S1B S1 Standard S0 S1A S1B S1	125.000 250.000 500.000 Known Concentration .000000 125.000 250.000 500.000	127.100 259.183 516.135 Measured Concentration .010323 122.814 254.856 499.031 Measured	-9.18317 -16.1352 Residual Concentration 010323 2.18578 -1.85626 .969421 Residual
CorCoef: Element Cd2288 CorCoef: Element	0.99998 Wavelength 228.802 0.99990 Wavelength	S1A S1B S1 Standard S0 S1A S1B S1	125.000 250.000 500.000 Known Concentration .000000 125.000 250.000 500.000 Known Concentration	127.100 259.183 516.135 Measured Concentration .010323 122.814 254.856 499.031 Measured Concentration	-9.18317 -16.1352 Residual Concentration 010323 2.18578 -4.85626 .969421 Residual Concentration
CorCoef: Element Cd2288 CorCoef:	0.99998 Wavelength 228.802	S1A S1B S1 Standard S0 S1A S1B S1 Standard S0	125.000 250.000 500.000 Known Concentration .000000 125.000 250.000 500.000 Known Concentration .000000	127.100 259.183 516.135 Measured Concentration .010323 122.814 254.856 499.031 Measured Concentration 002112	-9.18317 -16.1352 Residual Concentration 010323 2.18578 -4.85628 .969421 Residual Concentration .002112
CorCoef: Element Cd2288 CorCoef: Element	0.99998 Wavelength 228.802 0.99990 Wavelength	S1A S1B S1 Standard S0 S1A S1B S1 Standard S0 S1A	125.000 250.000 500.000 Known Concentration .000000 125.000 250.000 500.000 Known Concentration .000000 250.000	127.100 259.183 516.135 Measured Concentration .010323 122.814 254.856 499.031 Measured Concentration 002112 249.375	-9.18317 -16.1352 Residual Concentration 010323 2.18578 -4.85626 .969421 Residual Concentration .002112 .625046
CorCoef: Element Cd2288 CorCoef: Element	0.99998 Wavelength 228.802 0.99990 Wavelength	S1A S1B S1 Standard S0 S1A S1B S1 Standard S0 S1A S1B	125.000 250.000 500.000 Known Concentration .000000 125.000 250.000 500.000 Known Concentration .000000 250.000 500.000	127.100 259.183 516.135 Measured Concentration .010323 122.814 254.856 499.031 Measured Concentration 002112 249.375 505.439	-9.18317 -16.1352 Residual Concentration 010323 2.18578 -4.85626 .969421 Residual Concentration .002112 .625046 -5.43948
CorCoef: Element Cd2288 CorCoef: Element Cr2677	0.99998 Wavelength 228.802 0.99990 Wavelength 267.716	S1A S1B S1 Standard S0 S1A S1B S1 Standard S0 S1A	125.000 250.000 500.000 Known Concentration .000000 125.000 250.000 500.000 Known Concentration .000000 250.000	127.100 259.183 516.135 Measured Concentration .010323 122.814 254.856 499.031 Measured Concentration 002112 249.375	-9.18317 -16.1352 Residual Concentration 010323 2.18578 -4.85626 .969421 Residual Concentration .002112 .625046
CorCoef: Element Cd2288 CorCoef: Element	0.99998 Wavelength 228.802 0.99990 Wavelength 267.716	S1A S1B S1 Standard S0 S1A S1B S1 Standard S0 S1A S1B	125.000 250.000 500.000 Known Concentration .000000 125.000 250.000 500.000 Known Concentration .000000 250.000 500.000	127.100 259.183 516.135 Measured Concentration .010323 122.814 254.856 499.031 Measured Concentration 002112 249.375 505.439 991.621	-9.18317 -16.1352 Residual Concentration010323 2.18578 -4.85626 .969421 Residual Concentration .002112 .625046 -5.43948 8.37885
CorCoef: Element Cd2288 CorCoef: Element Cr2677	0.99998 Wavelength 228.802 0.99990 Wavelength 267.716	S1A S1B S1 Standard S0 S1A S1B S1 Standard S0 S1A S1B	125.000 250.000 500.000 Known Concentration .000000 125.000 250.000 500.000 Known Concentration .000000 250.000 500.000	127.100 259.183 516.135 Measured Concentration .010323 122.814 254.856 499.031 Measured Concentration 002112 249.375 505.439 991.621 Measured	-9.18317 -16.1352 Residual Concentration010323 2.18578 -4.85626 .969421 Residual Concentration .002112 .625046 -5.43948 8.37885 Residual
CorCoef: Element Cd2288 CorCoef: Element Cr2677	0.99998 Wavelength 228.802 0.99990 Wavelength 267.716	S1A S1B S1 Standard S0 S1A S1B S1 Standard S0 S1A S1B S1	125.000 250.000 500.000 Known Concentration .000000 125.000 250.000 500.000 Known Concentration .000000 250.000 500.000	127.100 259.183 516.135 Measured Concentration .010323 122.814 254.856 499.031 Measured Concentration 002112 249.375 505.439 991.621 Measured Concentration	-9.18317 -16.1352 Residual Concentration010323 2.18578 -4.85626 .969421 Residual Concentration .002112 .625046 -5.43948 8.37885 Residual Concentration
CorCoef: Element Cd2288 CorCoef: Element Cr2677 CorCoef: Element	0.99998 Wavelength 228.802 0.99990 Wavelength 267.716 0.99994 Wavelength	S1A S1B S1 Standard S0 S1A S1B S1 Standard S0 S1A S1B S1	125.000 250.000 500.000 Known Concentration .000000 125.000 250.000 500.000 Known Concentration .000000 250.000 500.000 1000.00	127.100 259.183 516.135 Measured Concentration .010323 122.814 254.856 499.031 Measured Concentration 002112 249.375 505.439 991.621 Measured	-9.18317 -16.1352 Residual Concentration010323 2.18578 -4.85628 .969421 Residual Concentration .002112 .625046 -5.43948 8.37885 Residual Concentration .050265
CorCoef: Element Cd2288 CorCoef: Element Cr2677	0.99998 Wavelength 228.802 0.99990 Wavelength 267.716	S1A S1B S1 Standard S0 S1A S1B S1 Standard S0 S1A S1B S1	125.000 250.000 500.000 Known Concentration .000000 125.000 250.000 500.000 Known Concentration .000000 250.000 500.000 1000.00 Known Concentration	127.100 259.183 516.135 Measured Concentration .010323 122.814 254.856 499.031 Measured Concentration 002112 249.375 505.439 991.621 Measured Concentration	-9.18317 -16.1352 Residual Concentration010323 2.18578 -4.85626 .969421 Residual Concentration .002112 .625046 -5.43948 8.37885 Residual Concentration .050265 .445313
CorCoef: Element Cd2288 CorCoef: Element Cr2677 CorCoef: Element	0.99998 Wavelength 228.802 0.99990 Wavelength 267.716 0.99994 Wavelength	S1A S1B S1 Standard S0 S1A S1B S1 Standard S0 S1A S1B S1	125.000 250.000 500.000 Known Concentration .000000 125.000 250.000 500.000 Known Concentration .000000 250.000 1000.00 Known Concentration .000000 250.000	127.100 259.183 516.135 Measured Concentration .010323 122.814 254.856 499.031 Measured Concentration 002112 249.375 505.439 991.621 Measured Concentration 050265 2499.55	-9.18317 -16.1352 Residual Concentration010323 2.18578 -4.85628 .969421 Residual Concentration .002112 .625046 -5.43948 8.37885 Residual Concentration .050265
CorCoef: Element Cd2288 CorCoef: Element Cr2677 CorCoef: Element	0.99998 Wavelength 228.802 0.99990 Wavelength 267.716 0.99994 Wavelength	S1A S1B S1 Standard S0 S1A S1B S1 Standard S0 S1A S1B S1	125.000 250.000 500.000 Known Concentration .000000 125.000 250.000 500.000 Known Concentration .000000 250.000 1000.00 Known Concentration .000000 250.000 500.000	127.100 259.183 516.135 Measured Concentration .010323 122.814 254.856 499.031 Measured Concentration 002112 249.375 505.439 991.621 Measured Concentration 050265 2499.55 5042.88	-9.18317 -16.1352 Residual Concentration010323 2.18578 -4.85626 .969421 Residual Concentration .002112 .625046 -5.43948 8.37885 Residual Concentration .050265 .445313
CorCoef: Element Cd2288 CorCoef: Element Cr2677 CorCoef: Element Fe2599	0.99998 Wavelength 228.802 0.99990 Wavelength 267.716 0.99994 Wavelength 259.940	S1A S1B S1 Standard S0 S1A S1B S1 Standard S0 S1A S1B S1	125.000 250.000 500.000 Known Concentration .000000 125.000 250.000 500.000 Known Concentration .000000 250.000 1000.00 Known Concentration .000000 250.000	127.100 259.183 516.135 Measured Concentration .010323 122.814 254.856 499.031 Measured Concentration 002112 249.375 505.439 991.621 Measured Concentration 050265 2499.55	-9.18317 -16.1352 Residual Concentration010323 2.18578 -4.85626 .969421 Residual Concentration .002112 .625046 -5.43948 8.37885 Residual Concentration .050265 .445313 -42.8843 83.9863
CorCoef: Element Cd2288 CorCoef: Element Cr2677 CorCoef: Element	0.99998 Wavelength 228.802 0.99990 Wavelength 267.716 0.99994 Wavelength 259.940	S1A S1B S1 Standard S0 S1A S1B S1 Standard S0 S1A S1B S1	125.000 250.000 500.000 Known Concentration .000000 125.000 250.000 500.000 Known Concentration .000000 250.000 1000.00 Known Concentration .000000 250.000 500.000	127.100 259.183 516.135 Measured Concentration .010323 122.814 254.856 499.031 Measured Concentration 002112 249.375 505.439 991.621 Measured Concentration 050265 2499.55 5042.88	-9.18317 -16.1352 Residual Concentration010323 2.18578 -4.85626 .969421 Residual Concentration .002112 .625046 -5.43948 8.37885 Residual Concentration .050265 .445313 -42.8843

Standardization	Readback	Report Mon 02	-19-96 02:37:36	PM page 2
		Known	Measured	Residual
ma	: Standard	Concentration	Concentration	Concentration
Tlament Wavelengtl	SC SCALLAR	.000000	042744	.042744
Mid316 231.604	S1A	1000.03	1003.21	-3.20867
,	S1B	2000.00	2014.95	-14.9551
1	S1B	4000.00	3957.26	42.7356
CarCoef: 0.99995 J	21	4000.00	3,3,.20	
CorCoef: 0.99995		Known	Measured	Residual
Element Wavelength	Standard	Concentration	Concentration	Concentration
Pb2203 220.353	S0	.000000	009556	.009556
PE2203 220.555	S1A	1250.00	1249.93	.071167
	S1B	2500.00	2534.07	-34.0715
,	S1	5000.00	4971.14	28.8584
CorCoef: 0.99994 J	0			
corcoer. 0.33334 3		Known	Measured	Residual
Element Wavelength	Standard	Concentration	Concentration	Concentration
5b2068 206.838	S0	.00000	.036517	036517
552000 200.030	S1A	1500.00	1479.54	20.4578
	S1B	3000.00	2997.79	2.20776
	S1	6000.00	5942.64	57.3643
CorCoef: 0.99998 √	2.	3333.33		
corcoer. 0.93990 y		Known	Measured	Residual
Element Wavelength	Standard	Concentration	Concentration	Concentration
Se1960 196.026	SO SO	.000000	249182	.249182
301900 190.020	S2A	5000.00	5042.13	-42.1304
	, S2B	10000.0	9946.56	53.4375
	S2	20000.0	19938.4	61.6465
CorCoef: 0.99999	7.0			
		Known	Measured	Residual
Element Wavelength	Standard	Concentration	Concentration	Concentration
T11908 190.864	S0	,000000	207502	.207502
•	S2A	5000.00	5037.68	-37.6753
,	S2B	10000.0	9939.95	60.0527
./	S2	20000.0	19969.4	30.5996
CorCoef: 0.99999				
		Known	Measured	Residual
Element Wavelength		Concentration	Concentration	Concentration
V-2924 292.402	S0	.000000	.033434	033434
	SIA	1250.00	1242.16	7.84106
J	S1B	2500.00	2521.80	-21.7991
	S1	5000.00	4990.02	9.98389
CorCoef: 0.99998		77	Magazzas	Docidual
91	0	Known	Measured	Residual Concentration
Element Wavelength		Concentration	Concentration	009542
In2138 213.856	S0	.000000	.009542	-1.62607
	S1A	500.000 1000.00	501.626 1016.81	-16.8106
•	/S1B S1	2000.00	2011.17	-11.1749
CorCoef: 0.99998	. DT	2000.00	2011.11	-11,1177
Colcoel: 0.33330				

Operator: PMP

Sample Name: STD1 🗸 Method: COE Sample Na |Run Time: 02/19/96 14:39:14

Comment: Mode: CONC Corr. Factor. 1

	Mode: Ou.	(() 0011.	ractor. I					
	Elem Units Avge SDev %RSD	Ag3280 ppb 968.4 5.5	A13082 ppb 9933. 24. .2383	As1936 ppb -15.83 7.33 46.17	Ba4934 ppb 9766. 41. .4167	Be3130 ppb 477.5 .3	Cd2288 ppb 495.9 3.8 .7577	Cr2677 ppb 973.0 1.6 .1667
	#40	966.7 963.9 974.6	9927. 9913. 9959.	-16.99 -8.055 7 ^{22.59}	9720. 9783. 9796.	477.3 477.5 477.3	495.2 492.6 500.0	973.9 973.9 971.1
	Errors Value Range	QC Pass 1000. 5.000	QC Pass 10000. 5.000	NOCHECK	QC Pass 10000.	QC Pass 500.0 5.000	QC Pass 500.0 5.000	QC Pass 1000. 5.000
	Elem Units Avge SDev %RSD	Fe2599 ppb 9734. 19.	Ni2316 ppb 3891. 17. .4485	Pb2203 ppb 4891. 12. .2430	Sb2068 ppb 5893. 31. .5322	Se1960 ppb 6.223 10.07 161.8	T11908 ppb 15.13 22.20 146.7	V-2924 ppb 4888. 7. .1345
)	#1 #2 #3	9716. 9733. 9754.	3911. 3878. 3885.	4891. 4879. 4902.	5929. 5876. 5874.	1.118 2690 /17.82	3.178 1.477 40.74	4881. 4890. 4894.
•	Errors Value Range	QC Pass 10000. 5.000	QC Pass 4000. 5.000	QC Pass 5000. 5.000	QC Pass 6000. 5.000	NOCHECK	NOCHECK	OC Pass 5000. 5.000
		T. 04 00		•				

Elem Zn2138 ppb Units 1942. Avge 2. SDev .1193 %RSD #1 1943.

#2 1939. #3 1944.

QC Pass Errors 2000. Value 5.000 Range

Operator: FMP

Method: COE Sample Name: STD2 / Run Time: 02/19/96 14:42:46

Comment:

Mode: CD	NC Corr.	Factor: 1			•		
Elem Units Avge SDev %RSD	Ag3230 ppb 2.409 1.961 81.38	A13082 pph 426.6 7.1 1.656	As1936 ppb 19600. 154.	Ba4934 ppb .8638 1.136 131.6	Be313C ppb .0378 .1297 147.7	Cd2Cs8 ppb 1.576 7.158 454.3	Cr2677 ppb -7.760 2.844 36.66
#1 #2 #3	2.223 4.457 .5482	418.9 432.8 428.1	19530. 19490. 19770.	3055 1.964 /.9326	.1509 .1739 0614	-2.367 9.838 -2.744	-8.763 -4.550 -9.966
Errors Value Range	NOCHECK	NOCHECK	QC Pass 20000.	NOCHECK	NOCHECK	NOCHECK	NOCHECK
Elem Units Avge SDev %RSD	Fe2599 ppb 1.156 .507 43.90	Ni2316 ppb 5.415 3.298 60.91	Pb2203 ppb -6.152 10.038 163.2	Sb2068 ppb 97.92 29.01 29.63	Se1960 ppb 19580. 218. 1.116	Tl1908 ppb 19780. 954782	V-2924 ppb 6.016 1.659 27.58
#1 #2 #3	1.513 1.379 .5750	2.999 4.073 9.172	2.093 -3.219 -17.33	88.00 130.6 75.17	19400. 19500. 19820.	19700. 19740. 19880.	4.636 7.857 5.556
Errors Value Range	NOCHECK	NOCHECK	NOCHECK	NOCHECK	QC Pass 20000. 5.000	QC Pass 20000. 5.000	NOCHECK
Elem Units Avge	Zn2138 ppb -1.062						

SDev .821 %RSD 77.33 #1 -1.709 -.1381 #2 -1.339 #3

Errors NOCHECK Value

Range

Method: COE Sample Name: ICB W Run Time: 02/19/96 14:48:09 Tomment: Operator: PMP

	Mode: CC	NG Corr.	Factor: 1	•				
	Elem Units Avge Slev %RSD	Ag3280 ppb .1760 1.162 660.4	A13082 ppb 14.41 12.54 87.05	As1936 ppb 1.215 8.524 701.5	Ba4934 ppb .7262 .5459 75.17	Ee3130 ppb .0149 .0240 161.2	Cd2288 ppb 1678 1.2212 727.8	Cr2677 ppb4702 .8108 172.4
	#1 #2 #3	1.107 -1.127 .5483	17.47 .6184 25.14	5.720 6.541 -8.616	.3135 .5199 1.345	.0203 0113 .0357	-1.193 1.183 4932	.2654 3365 -1.340
	Errors High Low	LC Pass 18.00 -18.00	LC Pass 111.8 -111.3	LC Pass 86.59 -86.59	LC Pass 8.510 -8.510	LC Pass .4600 4600	LC Pass 10.08 -10.08	LC Pass 14.99 -14.99
	Elem Units Avge SDev %RSD	Fe2599 ppb 1.022 1.124 110.0	Ni2316 ppb -2.727 3.904 143.2	Pb2203 ppb 4.971 14.99 301.6	Sb2068 ppb -6.189 13.870 224.1	Se1960 ppb 1.374 18.44 1342.	T11908 ppb -9.618 16.945 176.2	V-2924 PPb 4269 .2300 53.89
	#1 #2 #3	.4410 .3070 2.317	.9861 -6.797 -2.369	9145 -6.186 22.02	-22.12 3.227 .3239	.6783 -16.71 20.15	-3.344 -28.80 3.295	4268 6569 1969
,	Errors High Low	LC Pass 14.73 -14.73	LC Pass 26.04 -26.04	LC Pass 96.86 -96.86	LC Pass 81.16 -81.16	LC Pass 116.5 -116.5	LC Pass 102.7 -102.7	LC Pass 12.04 -12.04
	Elem Units Avge SDev %RSD	Zn2138 ppb .0201 .8077 4019.						

.2680 -.8825 .6748

#1 #2

#3

Operator: PMP

Mathod: COE Sample Name: ISB Run Time: 02/19/96 14:50:27

Iomment:

Mode: CONC Corr. Factor: 1

Mede.	,01,0						
Elem	Ag3280	A13082	As1936	Ba4934	Be3130	cd2293	Cr2677 ppb 464.7 2.4 .5252
Units	ppb	ppb	ppb	ppb	ppb	ppb	
Avge	1048.	507000.	974.9	478.9	461.3	997.9	
SDev	12.	5251.	34.2	5.8	3.7	4.0	
%RSD	1.160	1.036	3.512	1.220	.8127	.4020	
#1	1057.	510900.	1014.	482.5	464.1	1002.	466.3
#2	1034.	501000.	957.9	472.2	457.1	994.7	461.9
#3	1054.	509200.	952.4	482.1	462.8	996.7	465.9
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
Value	1000.	500000.	1000.	500.0	500.0	1000.	500.0
Range	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Elem Units Avge SDev %RSD	Fe2599 ppb 187800. 14627788	Ni2316 ppb 902.8 6.2 .6923	Pb2203 ppb 968.7 29.7 3.068	Sb2068 ppb 1048. 6.	Se1960 ppb 910.6 17.8 1.958	T11908 ppb 1017. 67. 6.546	V-2924 ppb 482.8 4.3 .8872
#1	188900.	902.4	950.5	1047.	928.9	1015.	485.0
#2	186100.	895.7	952.7	1044.	909.4	951.6	477.8
#3	188400.	909.2	1003.	1055.	893.3	1085.	485.5
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
Value	200000.	1000.	1000.	1000.	1000.	1000.	500.0
Range	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Elem Units	Zn2138						

Units 963.1 Avge' SDev 6.9 %RSD .7162 #1 968.3 #2 955.3 #3 965.8

Errors QC Pass Value 1000. Range 20.00

Operator: PMP

Range 50.00

Method: COE Sample Name: CRI / Run Time: 02/19/96 14:55:48

Comment:

Mode: CONC Corr. Factor: 1

1	::de: CON	Corr.	ractor: 1					
	Elem Units Avge SDev %RSD	Ag3280 ppb 16.76 4.43 26.45	A13082 ppb 189.5 17.0 8.972	As1936 ppb 380.3 10.7 2.822	Ba4934 PPb 191.7 4.6 2.361	Be3130 ppb - 3.237 .095 1.025	Cd2288 ppb 11.32 2.29 20.26	Cr2677 ppb 17.72 3.34 18.84
	#1	20.11	207.4	374.4	187.5	9.144	13.64	20.13
	#2	11.73	187.4	373.8	191.2	9.232	11.26	19.12
	#3	18.43	173.6	392.7	196.5	9.333	9.055	13.91
	Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
	Value	20.00	200.0	400.0	200.0	10.00	10.00	20.00
	Range	50.00	50.00	50.00	50.00	50.00	50.00	50.00
	Elem	Fe2599	Ni2316	Pb2203	Sb206S	Se1960	T11908	V-2924
	Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
	Avge	200.8	74.61	102.1	113.4	407.6	401.0	99.89
	SDev	2.3	1.98	15.4	21.9	21.4	17.2	2.11
	%RSD	1.150	2.651	15.13	19.34	5.256	4.297	2.112
)	#1	198.3	72.38	117.1	127.2	416.0	419.1	102.2
	#2	201.3	76.14	86.21	124.8	423.6	384.8	99.43
	#3	202.9	75.33	103.0	88.09	383.3	399.2	98.05
	Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
	Value	200.0	80.00	100.0	120.0	400.0	400.0	100.0
	Range	50.00	50.00	50.00	50.00	50.00	50.00	50.00
	Elem Units Avge SDev %RSD	Zn2138 ppb 37.36 .39 1.038						
	#1 #2 #3	36.97 37.35 37.75						
	Errors Value	QC Pass 40.00						

Operator: PMP

Sample Name: 96L0322-MB1 Method: COE

Run Time: 02/19/96 15:01:46

Comment:

Mode: CONC Corr. Factor: 1

MCTE: CO	110 0000	•					
Elem	Ag3280	A13082	As1936	Ba4934	Be3130	Cd2288	Cr2677 ppb -3.346 .723 21.62
Units	ppb	ppb	ppb	ppb	ppb	ppb	
Avge	-1.312	12.89	-12.84	.6574	0666	5871	
SDev	1.706	6.74	6.36	.4295	.0387	1.1489	
%RSD	130.0	52.27	49.53	65.33	58.06	195:7	
#1	.5493	8.241	-13.04	.5199	0242	.5311	-2.543
#2	-2.801	9.807	-19.09	.3135	0758	-1.764	-3.546
#3	-1.684	20.61	-6.379	1.139	0999	5279	-3.948
Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass
High	18.00	111.8	86.59	8.510	.4500	10.08	14.99
Low	-13.00	-111.8	-86.59	-8.510	4600	-10.08	-14.99
Elem	Fe2599 ppb 14.24 .35 2.489	Ni2316	Pb2203	Sb2068	Se1960	T11908	V-2924
Units		ppb	ppb	ppb	ppb	ppb	ppb
Avge		4901	-35.02	-14.93	-28.30	7.707	1211
SDev		3.2953	11.98	34.45	37.92	9.116	2.0105
%RSD		672.4	34.20	230.9	134.0	118.3	1661.
# C	13.97	2.328	-47.66	24.80	9.028	13.25	-1.809
# C	14.11	.3151	-23.84	-36.69	-27.14	12.69	6580
# 3	14.64	-4.113	-33.56	-32.89	-66.78	-2.814	2.103
Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass
High	14.73	26.04	96.86	81.16	116.5	102.7	12.04
Low	-14.73	-26.04	-96.86	-81.16	-116.5	-102.7	-12.04

Zn2138 Elem ppb Units H13.66 Avge .40 SDev 2.947 3RSD H13.65 #1 #2 H13.26

Errors LC High High 8.870 -8.870 Low

H14.07

#3

Method: COE Sample Name: 96L0322-LC1 Fun Time: 02/19/96 15:04:04 Operator: FMP

Comment:

Mode: CONC Corr. Factor: 1

	Mode: CU.	We corr.	131601					
	Elem	Ag3280	A13082	As1936	Ba4934	Be3130	Cd2288	Cr2677
	Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
	Avge	492.9	5057.	9727.	4987.	236.4	248.9	495.9
	SDev	3.4	37:	74.	41.	2.2	3.2	2.9
	%RSD	.6898	.7231	.7644	.8255	.9116	1.274	.5895
	#1	489.0	5015.	9648.	4939.	234.1	249.3	492.6
	#2	495.1	5081.	9739.	5010.	236.9	245.5	497.2
	#3	494.5	5076.	9795.	5011.	238.3	251.8	498.0
	Errors	LC Pass	LC Pass	LC Pass				
	High	573.5	5705.	11000.	5475.	278.0	287.3	563.5
	Low	406.0	4470.	9270.	4440.	222.5	211.3	447.5
	Elem Units Avge SDev %PSD	Fe2599 ppb 5048. 458936	Ni2316 ppb 1966. 21. 1.076	Pb2203 ppb 2458. 33. 1.323	Sb2068 ppb 3046. 26. .8592	Se1960 ppb 9766. 100. 1.024	T11908 ppb 9712. 646612	V-2924 ppb 2549. 23. .9076
)	#1	4996.	1945.	2422.	3038.	9655.	9680.	2523.
	#2	5071.	1965.	2468.	3025.	9794.	9786.	2558.
	#3	5077.	1987.	2484.	3076.	9849.	9670.	2566.
,	Errors	LC Pass	LC Pass	LC Pass				
	High	5595.	2206.	2735.	3273.	11000.	10740.	2815.
	Low	4420.	1814.	2303.	2778.	9240.	9500.	2255.
	Elem Units Avge SDev %RSD	Zn2138 ppb 986.9 8.0 .8102						

978.1 #1 989.0 #2 #3 993.6

LC Pass Errors 1109. High 907.0 Low

Analysis Report

Method: COE Sample Name: 96L0322-LC2 / Operator: PMP

Run Time: C2/19/96 15:06:22

Comment:

Mode: CONG Corr. Factor: 1

	, 5						
Elem	Ag3230	A13082	As1936	Ba4934	Be3130	Cd2288	Cr2677
Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Avge	501.4	5127.	9951.	5065.	241.0	251.3	503.5
SDev	4.3	49.	36.	23.	1.3	4.0	3.4
%RSD	.8652	.9577	.8656	.4552	.5198	1.576	.6778
#1	497.9	5083.	9859.	5039.	239.6	255.1	500.0
#2	500.1	5119.	9963.	5082.	241.6	251.6	503.6
#3	506.3	5180.	10030.	5075.	241.9	247.2	506.8
Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass
High	573.5	5705.	11000.	5475.	278.0	287.3	563.5
Low	406.0	4470.	9270.	4440.	222.5	211.3	447.5
Elem Units Avge SDev %RSD	Fe2599 ppb 5130. 234519	Ni2316 ppb 2004. 6. .2924	Pb2203 ppb 2484. 15.	Sb2068 ppb 3101. 3. .0857	Se1960 ppb 9910. 53.	T11908 ppb 9944. 626207	V-2924 ppb 2596. 13.
#1	5104.	2009.	2460.	3104.	9854.	9914.	2581.
#2	5142.	1998.	2501.	3099.	9919.	9903.	2605.
#3	5146.	2004.	2471.	3100.	9959.	10010.	2602.
Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass
High	5595.	2206.	2735.	3273.	11000.	10740.	2815.
Low	4420.	1814.	2303.	2778.	9240.	9500.	2255.
Elem Units Avge SDev %RSD	Zn2138 ppb 994.3 6.0 .6011						

987.5 #1 #2 996.9 998.5 #3

Errors LC Pass 1109. High 907.0 Low

Analysis Report

Method: COE Sample Name: 96021964-009 Operator: PMP Run Time: 02/19/96 15:09:32 Comment:

Mode: CONC Corr. Factor: 1

::. U u =		,,,						
Ele Uni Avg SDe %RS	ts e v	Ag3280 ppb -2.614 4.116 157.5	A13082 ppb 39.91 17.42 43.65	As1936 ppb -15.43 10.47 67.85	Ba4934/ ppb 1.276 .725 56.77	Be3130/ppb0098 .0578 590.0	Cd2288 ppb -1.025 .571 55.76	Cr1677 ppb5371 3.8224 711.7
#12 #2 #3		.5506 -1.125 -7.267	54.21 45.02 20.51	-7.961 -10.94 -27.40	1.345 1.964 .5199	.0384 .0061 0739	5034 9351 -1.636	1.570 1.570 -4.951
Err Hig Low		LC Pass 10000. -18.00	LC Pass 1000000. -111.8	LC Pass 100000. -86.59	LC Pass 100000. -8.510	LC Pass 2000. 4600	LC Pass 25000. -10.08	LC Pass 50000. -14.99
Ele Uni Avg SDe %RS	ts e v	Fe2599 ppb 29.07 1.37 4.708	Ni2316 ppb 3.670 .403 10.97	Pb2203 / ppb -6.532 6.201 94.94	Sb2068 ppb -23.67 18.46 77.99	Se1960 ppb -9.747 24.728 253.7	T11908 ppb 2.155 20.57 954.6	V-2924 ppb -1.196 .133 11.10
#1 #2 #3		30.05 29.65 27.51	4.073 3.267 3.670	-12.43 0681 -7.095	-2.881 -29.99 -38.15	18.07 -18.09 -29.22	21.53 4.368 -19.43	-1.119 -1.119 -1.349
Err Hig Low		LC Pass 250000. -14.73	LC Pass 200000. -26.04	LC Pass 250000. -96.85	LC Pass 120000. -81.16e	LC Pass 100000. -116.5	LC Pass 100000. -102.7	LC Pass 25000. -12.04
Ele Uni Avg SDe %RS	ts e v	Zn2138 ppb 35.95 .46 1.268						
#1 #2 #3		35.69 36.48 35.69						
Err Hig Low		LC Pass 100000. -8.870	,					

Method: COE Sample Name: 9602L964-C13 Operator: PMF

Run Time: 02/19/96 15:13:06

Comment:

Mode: CONC Corr. Factor: 1

Elem Units Avge SDev SRSD	Ag3230 / ppb -2.785 1.675 60.16	A13082 ppb 385.6 14.6 3.782	As1936 ppb -6.999 10.576 151.1	Ba4934 ppb 2.652 1.018 38.38	Be3130 ppb 0240 .0544 226.6	Cd22SS ppb 1.074 1.026 95.52	Cr2677 ppb 7.421 2.351 31.68
#1	-4.460	371.2	-16.70	2.171	0732	2.021	5.682
#2	-1.110	400.4	-8.565	3.821	.0345	0162	10.10
#3	-2.785	385.1	4.272	1.954	0333	1.218	6.485
Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass
High	10000.	1000000.	100000.	100000.	2000.	25000.	50000.
Low	-18.00	-111.8	-86.59	-8.510	4600	-10.08	-14.99
Elem Units Avge SDev &RSD	Fe2599 ppb 214.6 3.1 1.467	Ni2316 ppb 36.73 2.18 5.941	Pb2203/ppb 22.43 2.34 10.42	Sb2068 ppb -24.00 26.74 111.4	Se1960 ppb -4.367 9.596 219.8	T11908 ppb 3.197 8.474 265.1	V-2924 ppb .0173 1.509 8706.
#1	211.5	34.27	24.21 ·	-54.14	-15.26	6.341	-1.593
#2	217.8	37.49	23.29	-3.113	6563	9.650	.2472
#3	214.7	38.43	19.78	-14.76	2.821	-6.400	1.398
Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass
High	250000.	200000.	250000.	120000.	100000.	100000.	25000.
Low	-14.73	-26.04	-96.86	-81.16	-116.5	-102.7	-12.04
Elem	Zn2138						

Units ppb Avge 1303. 4. SDev .2695 %RSD

1307. #1 #2 1302.

1300. #3

Errors LC Pass 100000. High -8.870 Low

Method: COE Sample Name: 95021964-018 Cperator: PMP Pun Time: 02/19/96 15:16:18 Comment:

Mode: CONC Corr. Factor: 1

Elem Units Avge SDev %RSD	Ag3230 / ppb .0020 2.434 123800.	A13082 ppb 211.9 13.4 6.303	As1936 / ppb -17.08 7.11 41.60	Ba4934/ ppb 2.033 .596 29.30	Be3130 / ppb /05490432 78.73	Cd2288 ppb / 1.868 1.938 103.8	Cr2677 ppb 5.415 2.325 42.94
#1	-1.115	202.7	-16.80	1.345	0235	3663	8.090
#2	-1.673	205.8	-24.33	2.377	0370	3.095	3.877
#3	2.794	227.2	-10.12	2.377	1041	2.875	4.278
Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass
High	10000.	1000000.	100000.	100000.	2000.	25000.	50000.
Low	-18.00	-111.8	-86.59	-8.510	4600	-10.08	-14.99
Elem	Fe2599	Ni2316	Pb2203	Sb2068	Se1960 / ppb -9.252 18.155 196.2	T11908	V-2924
Units	ppb	ppb	ppb	ppb		ppb	ppb
Avge	152.2	7.696	4.127	11.30		1.439	-2.356
SDev	2.2	3.910	9.810	13.67		5.830	.531
%RSD	1.415	50.81	237.7	121.0		405.1	22.56
#1	153.7	3.402	-6.449	5572	11.15	6.972	-2.049
#2	153.1	8.635	5.899	26.26	-15.28	-4.649	-2.970
#3	149.7	11.05	12.93	8.197	-23.63	1.996	-2.049
Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass
High	250000.	200000.	250000.	120000.	100000.	100000.	25000.
Low	-14.73	-26.04	-96.86	-81.16	-116.5	-102.7	-12.04
Elem Units Avge SDev %RSD	Zn2138 ppb 5797. 15. .2558	·					
#1 #2 #3	5781. 5803. 5809.						
Errors High Low	LC Pass 100000. -8.870						

Comment:

Mode: CONC Corr. Factor: 1

515.4

515.5

510.0

Errors LC Pass High 100000. Low -8.870

#1

#2 #3

Elem Units Avge SDev %RSD	Ag3280 / ppb .7698 2.639 342.8	A13082 ppb 917.2 22.9 2.501	As1936 ppb -2.629 13.865 527.3	Ea4934 ppb 4.578 .781 17.06	Be3130 ppb 0437 .0720 164.7	Cd2283 ppb 49.11 2.33 4.751	2r2677 ppb 16.52 2.04 12.33
#1	2.817	942.7	11.07	5.472	1136	46.51	14.31
#2	-2.208	910.5	-16.65	4.234	0478	49.80	16.92
#3	1.700	898.3	-2.314	4.028	.0302	51.02	18.32
Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass
High	10000.	1000000.	100000.	100000.	2000.	25000.	50000.
Low	-18.00	-111.8	-86.59	-8.510	4600	-10.08	-14.99
Elem Units Avge SDev %RSD	Fe2599 ppb 444.1 1.6 .3557	Ni2316 ppb 18.39 4.27 23.20	Pb2203 ppb 109.4 16.4 14.95	Sb2068 / ppb -2.696 15.315 568.1	Se1960 ppb 13.31 20.74 155.8	T11908 ppb 11.37 22.82 200.8	V-2924 ppb 6.904 .460 6.668
#1	444.5	13.60	90.52	9.149	-8.944	37.01	6.904
#2	445.4	19.77	119.7	-19.99	16.79	3.801	6.443
#3	442.3	21.79	117.9	2.753	32.09	-6.713	7.364
Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass
High	250000.	200000.	250000.	120000.	100000.	100000.	25000.
Low	-14.73	-26.04	-96.86	-81.16	-116.5	-102.7	-12.04
Elem Units Avge SDev %RSD	Zn2138 ppb 513.6 3.1 .6110						

Operator: PMP Method: COE Sample Name: 9602L964-025

Run Time: 02/19/96 15:22:43

Comment:
Mode: CCNC Corr. Factor: 1

1	10de: COI	AC Coll.	radior. I					
	Elem Units Avge SDev %RSD	Ag3280 ppb 1.691 1.675 99.07	A13082 ppb 971.0 12.4 1.274	As1936 / ppb -1.673 7.573 452.8	Ba4934 ppb 20.05 .32 1.572	Be3130 ppb .0989 .0615 62.16	Cd2238 ppb 5.292 2.699 51.00	Cr2677 ppb 301.1 1.6 .5427
	#1 #2 #3	3.366 .0158 1.691	984.3 968.9 959.8	-2.733 -8.660 6.375	20.12 19.71 20.33	.0601 .0667 .1697	8.017 5.241 2.619	299.2 301.8 302.2
	Errors High Low	LC Pass 10000. -18.00	LC Pass 1000000. -111.8	LC Pass 100000. -86.59	LC Pass 100000. -8.510	LC Pass 2000. 4600	LC Pass 25000. -10.08	LC Pass 50000. -14.99
	Elem Units Avge SDev %RSD	Fe2599 ppb 322.5 2.1 .6442	Ni2316 ppb 57.17 1.88 3.289	Pb2203 ppb 76.37 4.92 6.443	Sb2068/ppb 98.75 26.51 26.85	Se1960 ppb -24.28 8.43 34.74	T11908 ppb 12.62 15.52 123.0	V-2924 ppb 13.43 1.76 13.09
1	#1 #2 #3	320.9 324.8 321.6	57.75 55.07 58.69	75.47 71.96 81.68	108.7 68.71 118.9	-34.01 -19.41 -19.41	30.52 4.506 2.843	13.82 11.51 14.97
,	Errors High Low	LC Pass 250000. -14.73	LC Pass 200000. -26.04	LC Pass 250000. -96.86	LC Pass 120000. -81.16	LC Pass 100000. -116.5	LC Pass 100000. -102.7	LC Pass 25000. -12.04
	Elem Units Avge SDev %RSD	Zn2138 ppb 1374. 15. 1.074						
	#1 #2 #3	1368. 1391. 1364.					;	
	Errors High Low	LC Pass 100000. -8.870						·

Mon 02-19-96 03:29:05 PM Analysis Report QC Standard page 1

Operator: PMP Method: COE Sample Name: CCV Run Time: C2/19/96 15:26:51

Comment:

Mcde: CONC Corr. Factor: 1

mode: CC	MC COII.	. 140001.	•				
Elem	Ag3280	A13082	As1936	Ba4934	Be3130	Cd2288	Cr2677
Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Avge	504.8	5094.	10520.	4957.	241.9	265.8	506.0
SDev	2.8	23.	34.	28.	1.1	3.5	2.4
%RSD	.5570	.4422	.3240	.5558	.4358	1.313	.4697
#1	505.2	5082.	10490.	4930.	241.3	264.9	507.2
#2	501.8	5079.	10500.	4957.	241.3	262.8	503.2
#3	507.4	5120.	10560.	4985.	243.2	269.6	507.4
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
Value	500.0	5000.	10000.	5000.	250.0	250.0	500.0
Range	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Elem	Fe2599 ppb 5114. 214144	Ni2316	Pb2203	Sb2068	Se1960	T11908	V-2924
Units		ppb	ppb	ppb	ppb	ppb	ppb
Avge		2030.	2574.	3191.	10500.	10440.	2575.
SDev		14.	30.	7.	28.	77.	13.
%RSD		.7042	1.184	.2346	.2702	.7381	.4931
#1	5099.	2014.	2608.	3198.	10480.	10350.	2565.
#2	5106.	2037.	2565.	3192.	10480.	10460.	2572.
#3	5139.	2039.	2548.	3183.	10530.	10500.	2589.
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
Value	5000.	2000.	2500.	3000.	10000.	10000.	2500.
Range	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Elem Units Avge SDev	Zn2138 ppb 999.0 4.7						

.4700

996.7

996.0

1004.

%RSD

#1

#2 #3 Method: COE Sample Name: CCB Run Time: 02/19/96 15:30:22 Operator: PMP

Comment:

Errors LC Pass High 8.870 Low -8.870

	Comment: Mode: CON	Corr.	Factor: 1			•		
	Elem Units Avge SDev %RSD	Ag3280 ppb 5684 1.6750 294.7	A13082 ppb 7.295 26.05 357.2	As1936 ppb .7228 1.539 213.0	Ba4934 ppb .4511 .8339 184.9	Be3130 ppb 0043 .0541 1255.	Cd2288 ppb9566 3.0867 322.7	Cr2677 ppb0690 2.3079 3345.
	#1	-2.243	-8.486	2.014	3055	0031	-4.481	1359
	#2	1.106	37.37	1.135	1.345	0591	1.267	-2.343
	#3	5683	-6.997	9808	.3135	.0492	.3441	2.272
	Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass
	High	18.00	111.8	86.59	8.510	.4600	10.08	14.99
	Low	-18.00	-111.3	-86.59	-8.510	4600	-10.08	-14.99
	Elem	Fe2599	Ni2316	Pb2203	Sb2068	Se1960	T11908	V-2924
	Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
	Avge	1.602	-2.100	-8.254	-10.26	11.34	-15.16	.6470
	SDev	1.697	2.681	4.091	11.82	3.50	8.79	1.497
	%RSD	105.9	127.6	49.57	115.2	30.86	58.00	231.4
) .	#1	1.915	7585	-10.59	1.802	14.59	-20.51	2.104
	#2	2289	-5.187	-10.65	-10.76	7.633	-19.95	9870
	#3	3.121	3559	-3.530	-21.82	11.81	-5.010	.7235
	Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass
	High	14.73	26.04	96.86	81.16	116.5	102.7	12.04
	Low	-14.73	-26.04	-96.86	-81.16	-116.5	-102.7	-12.04
	Elem Units Avge SDev %RSD	Zn2138 ppb 7699 .2214 28.75						
	#1 #2 #3	9065 8888 5145						

Operator: PMP Sample Name: 9602L964-026 Method: COE

Run Time: 02/19/96 15:32:41

Comment:

#1

#2

#3

High

Low

3133.

3128. 3132.

100000.

-8.870

Errors LC Pass

Mode: CONC Corr. Factor: 1

Elem Units Avge SDev %RSD	Ag3280 Jppb 1.688 1.675 99.24	A13082 ppb 859.1 3.2 .3715	As1936 ppb -1.666 9.059 543.6	Ba4934 ppb 15.79 .55 3.458	Be3130 ppb .0592 .0303 51.26	Cd2288 ppb 2.266 1.028 45.36	Cr2677 ppb 218.7 1.2 .5530
#1	3.363	861.6	7.623	16.20	.0940	2.122	218.5
#2	1.688	855.5	-2.147	15.17	.0443	1.318	217.5
#3	.0128	860.1	-10.48	16.00	.0391	3.358	219.9
Errors	LC Pass	LC Pass	LC Pass	-LC Pass	LC Pass	LC Pass	LC Pass
High	10000.	1000000.	100000.	100000.	2000.	25000.	50000.
Low	-18.00	-111.8	-86.59	-8.510	4600	-10.08	-14.99
Elem Units Avge SDev %RSD	Fe2599 ppb 289.2 1.2 .4204	Ni2316 ppb 17.27 2.59 15.00	Pb2203/ppb 68.58 13.87 20.22	Sb2068 ppb 91.46 9.98 10.91	Se1960 ppb .0579 13.96 24130.	T11908 ppb -5.589 33.217 594.3	V-2924 ppb 8.526 1.218 14.28
#1	290.5	20.18	78.28	80.86	13.27	30.57	7.605
#2	289.0	15.21	74.76	100.7	1.449	-12.60	8.066
#3	288.1	16.42	52.69	92.83	-14.55	-34.74	9.907
Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass
High	250000.	200000.	250000.	120000.	100000.	100000.	25000.
Low	-14.73	-26.04	-96.86	-81.16	-116.5	-102.7	-12.04
Elem Units Avge SDev %RSD	Zn2138 ppb 3131. 3.						

Analysis Report QC Standard

Operator: PMP

Method: COE Sample Name: ISB Run Time: 02/19/96 15:35:54

Comment:

Mode: CONC Corr. Factor: 1

Elem Units Avge SDev %RSD	Ag3280 ppb 1066. 6.	A13082 ppb 517100. 5421. 1.048	As1936 ppb 939.3 33.8 3.594	Ba4934 ppb 489.8 3.8 .7680	Be3130 ppb 469.1 5.6 1.185	Cd2288 ppb 1006. 10. 1.002	Cr2677 ppb 470.8 4.3 .9192
#1	1063.	516000.	957.2	489.1	467.0	1005.	468.9
#2	1061.	512300.	900.3	486.4	464.8	996.0	467.7
#3	1073.	523000.	960.2	493.9	475.3	1016.	475.7
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
Value	1000.	500000.	1000.	500.0	500.0	1000.	500.0
Range	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Elem Units Avge SDev %RSD	Fe2599 ppb 190300. 1792.	Ni2316 ppb 916.3 13.5 1.478	Pb2203 ppb 947.4 28.0 2.957	Sb2068 ppb 1038. 40. 3.846	Se1960 ppb 899.4 7.9 .8749	T11908 ppb 983.1 7.0 .7088	V-2924 ppb 490.0 4.4 .8968
#1	190000.	906.0	964.2	1018.	908.4	980.2	486.3
#2	188700.	911.2	915.1	1012.	896.2	978.1	488.9
#3	192200.	931.6	963.0	1084.	893.6	991.0	494.9
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
Value	200000.	1000.	1000.	1000.	1000.	1000.	500.0
Range	20.00	20.00	20.00	20.00	20.00	20.00	20.00

Elem	Zn2138
Units	ppb
Avge	977.8
SDev	9.6
&RSD	. 9850
#1	975.3
#2	969.7
#3	988.4

Errors QC Pass Value 1000. Range 20.00

Mon 02-19-96 03:43:30 PM page 1 QC Standard Analysis Report

Operator: PMP

Method: COE Sample Name: CCV Run Time: 02/19/96 15:41:15

Errors QC Pass

1000.

10.00

Value

Range

Comment:

Mode: CC		Factor: 1			•		
Elem Units Avge SDev %RSD	Ag3280 ppb 502.2 3.3 .6519	A13082 ppb 5082. 39.	As1936 ppb 10480. 88. .8422	Ba4934 ppb 4939. 57. 1.156	Be3130 ppb 241.0 2.4 1.008	Cd2288 ppb 263.2 2.1 .7919	Cr2677 ppb 503.8 7.4 1.460
#1 #2 #3	503.5 504.6 498.5	5110. 5099. 5037.	10570. 10470. 10390.	5004. 4912. 4900.	243.7 240.2 239.1	265.6 261.9 262.1	506.6 509.3 495.4
Errors Value Range	QC Pass 500.0 10.00	QC Pass 5000. 10.00	QC Pass 10000. 10.00	QC Pass 5000. 10.00	QC Pass 250.0 10.00	QC Pass 250.0 10.00	QC Pass 500.0 10.00
Elem Units Avge SDev %RSD	Fe2599 ppb 5085. 387455	Ni2316 ppb 2006. 7.	Pb2203 ppb 2551. 31. 1.207	Sb2068 prb 3183. 49. 1.530	Se1960 ppb 10470. 132. 1.261	T11908 ppb 10380. 777427	V-2924 ppb 2562. 19.
# <u>1</u> #2 #3	5127. 5075. 5053.	2011. 2008. 1998.	2568. 2571. 2516.	3223. 3197. 3128.	10610. 10440. 10350.	10470. 10320. 10350.	2585. 2553. 2549.
Errors Value Range	QC Pass 5000. 10.00	QC Pass 2000. 10.00	QC Pass 2500. 10.00	QC Pass 3000. 10.00	QC Pass 10000. 10.00	QC Pass 10000. 10.00	QC Pass 2500. 10.00
Elem Units Avge SDev %RSD	Zn2138 ppb 996.7 6.4 .6436						
#1 #2 #3	1004. 994.0 992.0	·					

Analysis Report Blank Sample

Mon 02-19-96 03:47:02 PM page 1

Operator: PMP

Method: COE

Sample Name: CCB

Run Time: 02/19/96 15:44:48

Comment:

Mode: CONC Corr. Factor: 1

Elem	Ag3280	A13082	As1936	Ba4934	Be3130	Cd2288	Cr2677
Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Avge	7545	4.236	-11.06	.3823	.0597	-2.367	2.539
SDev	3.0752	9.355	11.30	.6304	.0359	1.393	1.336
%RSD	407.6	220.8	102.2	164.9	60.02	58.84	52.61
#1	-2.802	-3.969	-18.29	3055	.1009	8212	3.576
#2	2.782	14.42	-16.86	.9326	.0351	-2.755	2.874
#3	-2.243	2.255	1.962	.5199	.0433	-3.524	1.068
Errors	LC Pass	LC Pass	LC Fass	LC Pass	LC Pass	LC Pass	LC Fass
High	18.00	111.2	86.59	8.510	.4600	10.08	14.99
Low	-18.00	-111.8	-86.59	-8.510	4600	-10.08	-14.99
Elem	Fe2599 ppb 2.405 .409 17.01	Ni2316	Pb2203	Sb2068	Se1950	T11908	V-2924
Units		ppb	ppb	ppb	ppt	FFD	ppb
Avge		.7624	5.867	-19.68	16.44	2.002	.8003
SDev		1.076	7.141	2.11	7.66	14.10	1.742
%RSD		141.2	121.7	10.73	46.59	704.4	217.7
#1	2.853	.9519	14.11	-18.33	20.15	-7.222	4270
#2	2.317	1.791	1.736	-22.11	21.54	-5.008	.0333
#3	2.049	3559	1.752	-18.59	7.634	18.24	2.795
Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass
High	14.73	26.04	96.86	31.15	116.5	102.7	12.04
Low	-14.73	-26.04	-96.86	-81.16	-116.5	-102.7	-12.04

Zn2138 Elem Units ppb Avge . 3999 .9867 SDev 246.8 &RSD

.2682 #1 1.446 #2 #3 -.5144

Errors LC Pass High €.270 -8.870 Low

Mon 02-19-96 04:23:30 PM page 1 Method Report Method: COE

STATUS INFORMATION **

Version: 66.0 Date Last Updated: 02/19/96 02:10 Date Created: 07/31/91 08:49

Number of lines: 15 Number of elements: 15

of lines calibrated: 0 # of lines standardized: 15 02/19/96 02:29 - 02/19/96 02:35

Data collection mode: Spectrum Shifter <4 positions>

Approx. time for analysis 1.8 mins.

Protection status: Un-protected

METHOD INFORMATION **

Normal Sample Introduction Device:

Concentration Calibration Mode:

Default Setup:

Auto-store Analysis Data? Yes Number of Repeats : 3 Flush Time (sec) : 50.0 Auto-store Stdzn Data? Store Individual Repeats? Yes

Auto-Increment Sample Names? No

Auto-print Analysis Data? Yes

Auto-print Stdzn Report : +Readback

Condensed Print Format?

Default File Names:

Autosampler Table : COE Analysis Data File : PSC219B

Sample Limits Table : LR846 Blank Limits Table : MB346 Calibration Data File : PS0219B

QC Check Table Calibration Stds Table : PS0219B

Method: COE Method Report Mon 02-19-96 04:23:30 PM page 2

INTERNAL STANDARDS INFORMATION **

# 1 Ra	Elem Symbol Time tio Constant/In	Wavelength tensity Multipl	Pre-integration 0 ication Factor: .1	Integration 5.0	Used? Yes
#	Elem Symbol	Wavelength	Pre-integration 0 ication Factor: 1	Integration 5.0	Used? No
# 3 Ra	Elem Symbol Time tio Constant/In	Wavelength tensity Multipl	Pre-integration 0 ication Factor: 1	Integration 5.0	Used? No
# 4 Ra	Elem Symbol Time tio Constant/In	Wavelength tensity Multipl	Pre-integration 0 ication Factor: 1	Integration 5.0	Used? No
# 5 Ra	Elem Symbol Time tio Constant/In	Wavelength	Pre-integration 0 .ication Factor: 1	Integration 5.0	Used? No
# 6 Ra	Elem Symbol Time atio Constant/In	Wavelength	Pre-integration 0 lication Factor: 1	Integration 5.0	Used? No
# 7 Ra	Elem Symbol Time atio Constant/In	Wavelength	Pre-integration 0 lication Factor: 1	Integration 5.0	Used? No

Method: COE Method Report Mon 02-19-96 04:23:30 PM page 3

OUTPUT INFORMATION **

Output Mode: Concentration

Override Print Limits? Yes
Override Significant Figures? No
Apply Background Correction? Yes
Apply Blank Subtraction? No
Limits Table: LR846 Check? Yes
Correction Factor:

Report to:

Screen Avgs

Printer Avgs, Stats, Reps, Errs, Units

PLASMA INFORMATION **

Gas Flow Rates

Torch gas flow : High Flow

Auxiliary gas flow: Medium (1.0 L/min)

Peristaltic Pump Parameters

Flush Pump Rate (RPM): 100 Relaxation time (sec): 0

Pump Tubing type : Tygon-Orange

Plasma Parameters

	Group	Group	Group	Group	Special
	#1	#2	#3	#4	Group
Approximate RF Power (W):	1150	1350	950	1750	1150
Analysis Pump Rate (RPM):	100	100	100	100	100
Nebulizer Pressure (PSI):	30	30	30	30	30

Element Information Mon 02-19-96 04:23:30 PM page 4

	Method: COE	Element	Information	Mon 02-19-1	96 04.25.50 11	page 4
+	Element: Wavelength:	Ag 328.068	Al 308.215/2	As 193.696	Ba 493.409 313	Be .042
	Element Name: Line Switch Conc: Peak SS Offset:	Ag3280 0 0	A13082 0 0	As1936 0 0	Ba4934 0 0	Be3130 0 0
	Timing Group No.:	1	1	1	1	1
	Print Limit Low: Print Limit High:	0	0	0	0	0
	Significant Figrs: Print Units:	4 ppb	4 ppb	4 ppb	4 ppb	4 ppb
•	BKG Low SS Offset: BKG High SS Offset BKG Element Name: BKG Factor:	. 1 5	NONE 15 n/a n/a	NONE 15 n/a n/a	NONE 15 n/a n/a	-15 NONE n/a n/a
	Stdz. Method: Std #1 (High) Name Conc/Sig: Std #2 (Low) Name: Conc/Sig: Std #3 Name: Conc: Std #4 Name: Conc: Std #5 Name: Conc:	0 S1A 250 S1B 500 S1	S0 0 S1A 2500 S1B 5000 S1 10000 n/a	S0 0 S2A 5000 S2B 10000 S2 20000	S0 0 S1A 2500 S1B 5000 S1 10000 n/a	S0 0 S1A · 125 S1B 250 S1 500 n/a
	Y - intercept: Slope:	-5.59381 279.18	-39.1807 765.752	-11.5346 376.4	305463 103.169	67435 8.06264
	Date Standardized: Time Standardized:	02/19/96 14:29	02/19/96 14:29	02/19/96 14:35	02/19/96 14:29	02/19/96 14:29
	Offset (A0): Gain (A1): Curvature (A2): Exponent (n):	0 1 0	0 1 0 1	0 1 0 1	0 1 0 1	0 1 0 1
	Max. Inflection:	NONE	NONE	NONE	NONE	NONE
	Date of Fit: Time of Fit:	NO FIT	NO FIT	NO FIT	NO FIT	NC FIT
	Use IECs: Number of IECs:	YES 2	YES 1	YES 3	NO 0	YES 1

		* *	Mon 02-19-96	: 04 · 23 · 30 PM	page 5
Method: COE	Element	Information	MON U2-19-90	. 04.23.30 11.	
Affecting Element: k1 factor: k2 factor: use?:	Fe2599 00008 0 YES	V-2924 03048 0 YES	A13082 .0038 0 YES	n/a n/a n/a n/a	V-2924 .00286 0 YES
use					
Affecting Element: k1 factor: k2 factor: use?:	V-2924 0082 0 NO	n/a n/a n/a n/a	Fe2599 .0001 0 YES	n/a n/a n/a n/a	n/a n/a n/a n/a
use					
	n/a n/a n/a n/a	n/a n/a n/a n/a	V-2924 .01617 O YES	n/a n/a n/a n/a	n/a n/a n/a n/a
Element: Wavelength:	Cd 228.802/2	Cr 267.716	Fe 259.940 23	Ni 1.604/2 220	Pb .353
Element Name: Line Switch Conc:	Cd2288 C	Cr2677 0 0	Fe2599 0 0	Ni2316 O C	Pb2203 0 0
Peak SS Offset:	0			1	1
Timing Group No.:	1	1	1		
Print Limit Low: Print Limit High:	0 C	0	0	0	0
Significant Figrs: Print Units:	4 ppb	4 ppb	4 ppb	4 ppb	4 ppb
BKG Low SS Offset: BKG High SS Offset BKG Element Name: BKG Factor:	:15	-15 NONE n/a n/a	-15 NONE n/a n/a	-15 NONE n/a n/a	-15 NONE n/a n/a
Stdz. Method: Std #1 (High) Name Conc/Sig:	Multiple:S0	Multiple S0 0	Multiple S0 O	Multiple S0	Multiple S0 0
Std #2 (Low) Name: Conc/Sig:	S1A 125	S1A 250	S1A 2500	S1A 1000	S1A 1250
Std #3 Name:	S1E 250	S1E 500	S1B 5000	S1B 2000	S1B 2500
Conc: Std #4 Name:	S1	S1	S1	S1 4000	S1 5000
Conc: Std #5 Name: Conc:	500 n/a n/a	1000 n/a n/a	10000 n/a n/a	n/a n/a	n/a n/a

Method: COE	Element I	nformation	Mon 02-19-96	04:23:30 PM	page 6
Y - intercept: Slope:	626792 233.918	-1.74086 100.313		-2.77 14 -67.098	-10.5972 441:152
Date Standardized: Time Standardized:	,,	02/19/96 14:29	02/19/96 14:29	02/19/96 14:29	02/19/96 14:29
Offset (A0): Gain (A1): Curvature (A2): Exponent (n):	0 1 0	0 1 0 1	0 1 0 1	0 1 0 1	0 1 0 1
Max. Inflection:	NONE	NONE	NONE	NONE	NONE
Date of Fit: Time of Fit:	NO FIT	NO FIT	NO FIT	NO FIT	NO FIT
Use IECs: Number of IECs:	YES 1	NO 0	NO O	NO 0	YES 1
Affecting Element: k1 factor: k2 factor: use?:	As1936 .0155 0 YES	n/a n/a n/a	n/a	n/a	A13082 .0013 0 YES

Method: COE	Element	Information	Mon 02-19-96	04:23:30 PM	page 7
Element:	Sb	Se	Tl	V	Zn
Wavelength:	206.838	196.026	190.864/2 29	2.402 213	.856
Element Name:	Sb2068	Se1960	T11908	V-2924	Zn2138
Line Switch Conc:	0	0	0	0	0
Peak SS Offset:	0	0	0	0	0
Timing Group No.:	1	1	1	1	1
Print Limit Low: Print Limit High:	0 0	0	0	0	0
Significant Figrs: Print Units:	4	4	4	4	4
	ppb	ppb	ppb	ppb	ppb
BKG Low SS Offset:	:15	-15	NONE	NONE	NONE
BKG High SS Offset		NONE	15	29	15
BKG Element Name:		n/a	n/a	n/a	n/a
BKG Factor:		n/a	n/a	n/a	n/a
Stdz. Method: Std #1 (High) Name Conc/Sig: Std #2 (Low) Name: Conc/Sig: Std #3 Name: Conc: Std #4 Name: Conc: Std #5 Name: Conc:	:S0 0 S1A 1500 S1B 3000 S1	Multiple S0 0 S2A 5000 S2B 10000 S2 20000 n/a	SC 0 S2A 5000 S2B 10000 S2 20000	Multiple S0 0 S1A 1250 S1B 2500 S1 5000 n/a n/a	Multiple S0 0 S1A 500 S1B 1000 S1 2000 n/a n/a
Y - intercept:	-3.75218	2.76479	2.19105	.723779	909275
Slope:	145.73	347.766	276.756	115.058	98.436
Date Standardized:	02/19/96	02/19/96	02/19/96	02/19/96	02/19/96
Time Standardized:	14:29	14:35	14:35	14:29	14:29
Offset (AC): Gain (A1): Curvature (A2): Exponent (n):	C	C	0	0	0
	1	1	1	1	1
	0	0	0	0	0
	1	1	1	1	1
Max. Inflection:	NONE	NONE	none	NONE	NONE
Date of Fit: Time of Fit:	NO FIT	NO FIT	NO FIT	NO FIT	NO FIT
Use IECs:	YES	YES	YES	YES	YES
Number of IECs:	3	1	2	1	2

Method: COE	Element	Information	Mon 02-19-96	04:23:30	PM page 8
Affecting Element:	As1936	Fe2599	Fe2599	Fe2599	Fe2599
	.00008	00026	.00133	.000075	.00013
	0	0	0	0	0
	YES	YES	YES	YES	YES
Affecting Element:	V-2924	n/a	V-2924	n/a	Ni2316
k1 factor:	00843	n/a	.0018	n/a	.00395
k2 factor:	O	n/a	O	n/a	O
use?:	YES	n/a	YES	n/a	YES
Affecting Element:	Ni2316	n/a	n/a	n/a	n/a
k1 factor:	00143	n/a	n/a	n/a	
k2 factor:	C	n/a	n/a	n/a	
use?:	YES	n/a	n/a	n/a	

Method:	COE	Standa	rd: SO				
Elem	Ag3280	A13082	As1936	Ba4934	Bé3130	Cd2288	Cr2677
Avge	.0107	.0447	.0013	0020	.0807	0053	0093
SDev	.0153	.0214	.0231	.0035	.0070	.0061	.0280
%RSD	143.2	47.88	1758.	173.2	8.707	114.6	300.3
#1 #2 #3	.01= \\0060 .0240	.0250 .0400 .0680	0160 0080 .0280	006C .0000 .0000	.0220 .0740 .0200	0040 0120 .0000	0080 0380 .0130
Elem	Fe2599	Ni2316	Pb2203	Sb2068	Se1960	T11908	V-2924
Avge	.0007	.0067	.0167	0900	.0573	0527	0387
SDev	.0311	.0297	.0291	.0964	.0546	.0220	.0190
%RSD	4670	445.3	174.9	107.2	81.09	41.83	49.16
#1	.0040	0260	.0400	0500	.1260	0730	0380
#2	0320	.0140	0160	2000	.0130	0380	0580
#3	:0300	.0320	.0260	0200	.0380	0420	0200

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Method:	COE	Standa	rd: S1A				
Elem Avge SDev %RSD	Ag3280 .9527 .0129 1.350	A13082 3.329 .019 .5709	Ba4934 24.43 .24 .9624	Be3130 16.45 .14 .8669	Cd2288 .5527 .0110 1.993	Cr2677 2.637 .040 1.517	Fe2599 39.62 .27 .6722
#1 #2 #3	.9389 .9620 .9580	3.310 3.330 3.348	24.22 24.69 24.40	16.32 16.60 16.43	.5600 .5580 .5400	2.636 2.678 2.593	39.39 39.91 39.55
Elem Avge SDev %RSD	Ni2316 15.92 .07 .4610	Pb2203 3.034 .031 1.023	Sb2068 10.92 .14 1.284	V-2924 11.45 .07 .5834			
#1.	15.93	2.938 3.052 3.052	10.90 11.07 10.79	11.33			

Method:	COE	Standa	rd: S1B				
Elem Avge SDev SRSD	Ag3290 1.949 .017 .9435	A13032 6.553 .046 .7029	Ba4934 47.70 .51 1.063	Be3130 32.02 .25 .7840	Cd2288 1.087 .017 1.586	Cr2677 5.123 .031 .6078	Fe2599 77.00 .61 .7936
#1 #2 #3	1.829 1.860 1.356	6.503 6.600 6.550	47.15 48.16 47.73	31.77 32.27 32.03	1.084 1.106 1.072	5.090 5.126 5.152	76.36 77.57 77.07
Elem Avge SDev %RSD	Ni2316 30.77 .29 .9565	Pb2203 5.939 .033 .5598	Sb2068 21.17 .12 .5756	V-2924 22:31 .19 .8371			
#1 #2 #3	30.43 30.91 30.96	5.934 5.974 5.908	21.03 21.25 21.23	22.10 22.46 22.36			٠

Method:	COE	Standa	rđ: S1				
Elem Avge SDev %RSD	Ag3280 3.662 .028 .7704	A13082 13.19 .1 .7482	Ba4934 96.83 .70 .7181	Be3130 64.55 .31 .4345	Cd2288 2.169 .010 .4731	Cr2677 10.26 .05 .4885	Fe2599 153.9 .9 .5751
#1 #2 #3	3.636 3.658 3.692	13.08 13.20 13.28	96.03 97.22 97.25	64.20 64.69 64.77	2.178 2.158 2.172	10.21 10.31 10.26	152.9 154.4 154.5
Elem Avge SDev %RSD	Ni2316 61.33 .27 .4384	Pb2203 11.30 .04 .3502	Sb2068 42.49 .42 .9988	V-2924 44.88 .27 .6081			
#1 #2 #3	61.05 61.37 61.58	11.76 11.85 11.80	42.03 42.57 42.97	44.56 45.01 45.06			

Method:	COE	Standa	rd: S2A
Elem	As1936	Se1960	T11908
Avge	13.57	14.75	18.58
SDev	.06	.05	.09
SRSD	.4058	.3152	.5089
#1	13.54	14.71	18.53
#2	13.64	14.80	18.51
#3	13.55	14.73	18.68

Standardization Rpt.

Method:	COE	Standa	rd: SZB
Elem	As1936	Se1960	T11908
Avge	27.66	29.89	37.58
SDev	.32	.19	.26
%RSD	1.144	.6279	.6790
#1	27.48	30.05	37.34
#2	28.02	29.93	37.85
#3	27.47	29.69	37.55

Standardization Rpt.

Method:	COE	Standa	rd: S2
Elem	As1936	Se1960	T11908
Avge	55.06	59.54	74.47
SDev	.36	.43	.24
%RSD	.6539	.7148	.3280
#1	55.42	60.00	74.75
#2	55.06	59.45	74.37
#3	54.70	59.16	74.29

Standardization Report

Method: COE Slope = Conc(SIR)/IR

Element Ag3280 A13082 As1936 Ba4934 Be3130 Cd2288 Cr2677 Fe2599 Ni2316 Pb2203 Sb2068 Se1960 Tl1908 V-2924	Wavelen 328.068 308.215 193.696 493.409 313.042 228.802 267.716 259.940 231.604 220.353 206.838 196.026 190.864 292.432	High std Multiple	Low std Standards	Slope 270.220 751.753 364.384 103.460 7.96021 227.562 96.4082 64.3303 64.3498 421.300 138.291 337.359 267.505 110.669	Y-intercept -2.91378 -33.5941173891 .077327651426 1.20062 .867927346711581742 -7.14030 12.2356 -22.4428 14.1321 4.15358	Date Star 02/20/96 02/20/96 02/20/96 02/20/96 02/20/96 02/20/96 02/20/96 02/20/96 02/20/96 02/20/96 02/20/96 02/20/96 02/20/96	06:58:13 06:58:13 07:04:36 06:58:13 06:58:13 06:58:13 06:58:13 06:58:13 06:58:13 06:58:13 06:58:13
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Standard	ization	Readback	Report	Tue 02-2	0-96 07:06:36	PM pa	ige 1
Method:	COE		K n	own	Measured	Resid	
		G+		tration	Concentration	Concent	ration
Element	Wavelength	Standard		0000	031434	.031	.434
Ag3280	328.068	SO		.000	254.516	-4.5	1576
		S1A			496.453	3.54	
		S1B		.000	986.632	13.3	
	,	S1	100	0.00	900.032		
CorCoef:	0.99996 🗸				Vacqueed	Resid	lual
	·			own	Measured		
Element	Wavelength	Standard			Concentration	.015	
A13082	308.215	S0		0000	015825	30.7	
	- ,	S1A		0.00	2469.24	107.	
		S1B	500	0.00	4892.40		
	_	S1	100	00.0	9381.03	118.	969
corcoef.	0.99998						. •
COLCOEL.	0.55550		Kn	.own	Measured	Resid	
77	Wavelength	Standard		tration	Concentration	Concent	
Element		50		0000	. 311955		.1955
As1936	193.696	S2A		0.00	4945.49	54.5	1073
				0.00	10077.5	-77.	4814
	,	S2B		00.0	20063.1	-63.	0684
		S2	200	00.0			
CorCoef:	0.99999		77	41.75	Measured	Resid	lual
				own	Concentration		
Element	Wavelength	Standard			129093	.129	
Ba4934	493.409	S0		0000			0933
		S1A		0.00	2528.09	65.2	
	•	S1B		0.00	4934.71		1973
	. /	S1	100	00.0	10018.2	-10.	19/3
CorCoef:	C.99995					5 4.4	3
				lown	Measured	Resid	
Element	Wavelength	Standard			Concentration	Concent	
Be3130	313.042	S0	.00	0000	009302	. 009	302
503150	•=•	S1A	125	.000	130.299		29938
		S1B	250	.000	254.245		4518
	1	S1	500	.000	513.212	-13.	2121
corcoof.	0.99997~	01					
COLCOEL.	0.9555.		Kn	lown	Measured	Resid	
77	Wayalangth	Standard		itration	Concentration	Concent	
Element	Wavelength	so		0000	013047	.013	3047
Cd2288	228.802			0000	126.967	-1.9	96677
		S1A		2.000	248.637	1.36	319
		S1B		0.000	494.859		1069
_	/	S1	500	7.000	474.003		
CorCoef:	0.99398		**		Measured	Resid	lual
				nown	Concentration		ration
Element	Wavelength	Standard		itration	031882		1832
Cr2677	267.71€	SO		0000	255.128		2848
		S1A		0.000		5.26	
	1	S1B		0.000	494.735	9.98	
	/	S1	100	0.00	990.016	9.90	2332
CorCoef:	0.99996				•	•	31
_				ncwn	Measured	Resid	
Element	Wavelength	Standard		ntration	Concentration		tration
Fe2539	259.940	30	.00	20000	303824		3324
	-	S1A	250	20.09	2548.34		. 3352
		S13		00.00	4953.05		9536
	1	S12		00.0	9900.56	99.	4355
. CorCoef:	. n qqqq7 🗸	~-		- · ·			
COTUGET							117
							11.6

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	Standardization		Readback	Report	Tue 02	-20-96 07:06:36	PM page 2
					Known	Measured	Residual
_			a	Con	centration	Concentration	Concentration
		Wavelength	Standard	COII	.000000	152743	.152743
	Ni2316	231.604	S0		1000.00	1023.82	-23.8244
			S1A			1979.25	20.7524
			S1B		2000.00	3946.21	53.7932
		1	S1		4000.00	3946.21	33.7932
	CorCoef:	n 99995 J				_	
	corcoer.	0.0000			Known	Measured	Residual
	71	Wavelength	Standard	Con	centration	Concentration	Concentration
		220.353	S0		.000000	119138	.119138
	Pb2203	220.333	S1A		1250.00	1271.08	-21.0822
					2500.00	2494.82	5.18286
		/	S1B		5000.00	4965.04	34.9629
			S1		3000.00	4705.01	
	CorCoef:	0.99998			••	Vengurod	Residual
				_	Known	Measured	Concentration
	Element	Wavelength	Standard	Con	centration	Concentration	.210548
		206.838	30		.000000	210548	
			S1A		1500,00	1522.19	-22.1871
			S1B		3000.00	2939.53	60.4241
		,	S1		6000.00	5888.49	111.510
	CorCoef:	0 20205.	-				
	corcer.	U.93995 V			Known	Measured	Residual
		Mana Lameth	Standard	Con	centration	Concentration	Concentration
		Wavelength	S0	501	.000000	.272652	272652
	2e1960	196.026			5000.00	4953.37	46.6289
			S2A		10000.0	10061.7	-61.6543
		,	SZB			20063.2	-63.2109
		. 1	S2		20000.0	20003.2	00.2207
	CorCoef:	0.99999				V	Residual
					Known	Measured	Concentration
	Element	Wavelength	Standard	Con	centration	Concentration	043567
	T11908	190.864	S 0		.000000	.043567	
			S2A		5000.00	4983.12	16.8799
		•	S2B		10000.0	10066.4	-66.4229
		<i>f</i>	S 2		20000.0	19934.7	€5.3301
	CorCoef:	0.99998					
	COLCOEL.	0.33330			Known	Measured	Residual
	Element	Wavelength	Standard	Cor	centration	Concentration	Concentration
	V-2924	292.402	S0		.000000	125611	.125611
	v ー Z フ Z せ	252.404	S1A		1250.00	1271.53	-21.5311
	•	1	SIA S1B		2500.00	2472.80	27.1973
		.1			5000.00	4970.52	29.4795
		V	S1		3000.00	45/0.52	
	A	n 00007					

CorCoef: 0.99997

Analysis Report QC Standard Tue 02-20-96 07:10:21 PM page 1

Method: COE Sample Name: STD1 Run Time: 02/20/96 19:08:06

Operator: PMP

Comment:

Mode: CONC Corr. Factor: 1

ľ	iode: coi	40, 0011.	140001					
	Elem Units Avge SDev %RSD	Ag3280 ppb 982.4 5.3 .5351	A13082 ppb 10120. 60. .5967	As1936 ppb .5420 7.754 1431.	Ba4934 ppb 9874. 71. .7235	Be3130 ppb 481.9 2.9 .6069	Cd2283 ppb 492.7 3.2 .6585	Cr2677 ppb 985.0 7.0 .7058
	#1 #2 #3	977.9 981.2 988.2	10060. 10120. 10180.	-7.159 .4371 8.348	9807. 9864. 9949.	479.5 481.0 485.1	492.8 495.9 489.4	979.2 983.1 992.7
	Errors Value Range	QC Pass 1000.	QC Pass / 10000. 5.000	NOCHECK	QC Pass / 10000. 5.000	QC Pass 500.0 5.000	QC Pass 500.0 5.000	QC Pass 1000. 5.000
	Elem Units Avge SDev %RSD	Fe2599 ppb 9355. 54.	Ni2316 ppb 3943. 6.	Pb2203 ppb 4942. 14. .2781	Sb2068 ppb 5954. 68. 1.142	Se1960 ppb -24.38 .78 3.201	T11908 ppb 32.79 14.86 45.33	V-2924 ppb 4940. 26. .5257
	#1 #2 #3	9804. 9850. 9911.	3936. 3946. 3948.	1932. 4936. 4957.	5912. 5918. 6032.	-23.94 -25.28 -23.91	17.92 32.32 47.65	4920. 4931. 4970.
	Errors Value Range	QC Pass / 10000. 5.000	QC Pass 4000. 5.000	OC Pass / 5000. 5.000	20 Pass 6000. 5.000	NOCHECK	NCCHECK	QC Pass 5000. 5.000

Operator: PMP

Method: COE Sample Name: STD2 Run Time: 02/20/96 19:11:39

Comment:
Mode: CONC Corr. Factor: 1

Mo	ode: CON	ic corr.	ractor: 1					
\ 2 3	Elem Units Avge SDev %RSD	Ag3280 ppb 3.034 4.083 134.6	A13082 ppb 498.5 13.8 2.778	As1936 ppb 19870. 230. 1.408	Ba4934 ppb .4917 .8277 168.3	Be3130 ppb .1083 .0642 59.33	Cd2283 ppb 9.122 3.366 36.90	Cr2677 ppb -6.845 2.416 35.30
i	#1 #2 #3	6.820 -1.293 3.574	511.1 483.7 500.5	20180. 1965C. 19770.	1.319 3360 .4917	.0598 .1811 .0838	5.316 10.34 11.71	-6.652 -4.531 -9.351
•	Errors Value Range	NOCHECK	NOCHECK	QC Pass 20000. 5.000	NOCHECK	NOCHECK	NOCHECK	NOCHECK
	Elem Units Avge SDev %RSD	Fe2599 ppb 2.312 1.629 70.46	Ni2316 ppb .5766 4.359 756.3	Pb2203 ppb -13.09 20.88 159.5	Sb2068 ppb 92.50 18.42 19.91	Se1960 ppb 19800. 243. 1.228	T11908 ppb 19310. 211. 1.063	V-2924 ppb 7.694 1.232 16.02
	#1 #2 #3	1.069 4.156 1.712	-2.255 5.596 -1.611	-1.904 1373 -37.19	113.7 83.88 79.97	20080. 19650. 19660.	20050. 19670. 19720.	6.587 7.472 9.022
•	Errora Value Range	NOCHECK	HOCHECK	NCCHECK	NOCHECK	QC Pass 20000. 5.000	QC Pass 20000. 5.000	NOCHECK

Operator: PMP

Method: COE Sample Name: ICB Run Time: 02/20/96 19:17:02

Comment:

Mode: CONC Corr. Factor: 1

mode: CC	INC COII.	140001					
Elem	Ag3280	A13082	As1936	Ba4934	Be3130	Cd2288	Cr2677 ppb 1.061 .695 65.54
Units	ppb	ppb	ppb	ppb	ppb	ppb	
Avge	1.772	15.39	5.039	.6986	0067	.0656	
SDev	2.722	11.28	5.515	.7461	.0186	2.312	
%RSD	153.7	73.26	109.4	106.8	276.6	3525.	
#1	4.656	24.05	4.761	1.526	0280	1.587	.4823
#2	7525	2.642	10.69	.0778	.0061	-2.595	.8679
#3	1.411	19.48	3310	.4917	.0017	1.205	1.832
Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass
High	13.00	111.8	86.59	8.510	.4600	10.09	14.99
Low	-13.00	-111.8	-86.59	-3.510	4600	-10.08	-14.99
Elem	Fa2599	Ni2316	Pb2203	Sb2068	Se1960	T11908	V-2924
Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Avge	.0112	-2.426	-18.91	17.11	-42.23	11.27	4.596
SDev	.5608	5.430	2.23	19.11	14.97	20.14	.798
%RSD	63.13	223.8	11.80	111.7	35.45	178.7	17.36
#1	1.069	-4.185	-21.44	37.46	-58.20	1.282	4.317
#2	1.197	3.665	-18.05	4554	-28.51	34.45	3.710
#3	.1679	-6.759	-17.23	14.32	-39.99	-1.928	5.259
Errora	LC Pass	LC Pass	LC Pass	LC Fass	LC Pass	LC Pass	LC Pass
High	14.73	25.04	96.36	81.16	116.5	102.7	12.04
Low	-14.73	-26.04	-96.36	-81.15	-116.5	-102.7	-12.04

Method: COE Sample Name: ISB Run Time: 02/20/96 19:19:19 Operator: PMP

Comment:
Mode: CONC Corr. Factor: 1

ľ	10de: CUI	AC COII.	ractor. I					
	Elem	Ag3280	A13082	As1936	Ba4934	Be3130	Cd2233	Cr2677
	Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
	Avge	1023.	508300.	949.7	477.9	453.2	958.2	458.5
	SDev	8.	5587.	47.0	5.5	4.4	10.0	4.1
	%RSD	.8304	1.099	4.952	1.148	.9775	1.045	.8864
	#1	1032.	514500.	966.1	483.9	458.2	968.9	463.2
	#2	1015.	503600.	986.4	473.1	449.7	949.0	456.1
	#3	1023.	506900.	896.7	476.6	451.7	956.7	456.3
	Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
	Value	1000.	500000.	1000.	500.0	500.0	1000.	500.0
	Range	20.00	20.00	20.00	20.00	20.00	20.00	20.00
	Elem Units Avge SDev 3RSD	Fe2599 ppb 185000. 1409.	Ni2315 ppb 891.6 12.3 1.379	Pb2203 ppb 954.4 10.8 1.134	Sb2068 ppb 1003. 1. .9551	Se1960 ppb 915.8 44.1 4.819	T11908 ppb 987.8 36.4 3.682	V-2924 ppb 475.0 3.3 .6925
	#1	186500.	903.8	948.6	1013.	904.5	996.8	473.8
	#2	183700.	891.8	947.6	994.5	964.5	1019.	473.0
	#3	184800.	879.2	966.8	1002.	878.5	947.7	473.2
	Errors	QC Pass	QC Pass	QC Fass	QC Pass	QC Fass	QC Pass	QC Fass
	Value	200000.	1000.	1000.	1000.	1000.	1000.	500.0
	Range	20.00	20.00	20.00	20.00	20.00	20.00	20.00

Tue 02-20-96 07:26:55 PM page 1 Analysis Report QC Standard

Operator: PMP Method: COE Sample Name: CRI Run Time: 02/20/96 19:24:41

Comment:
Mode: CCNC Corr. Factor: 1

Mode: CC	enc Corr.	Factor: 1					
Elem	Ag3280	A13082	As1936	Ba4934	Be3130	Cd2288	Cr2677
Units	ppb	ppb	ppb	prb	ppb	ppb	ppb
Avge	20.90	198.1	407.2	204.4	9.667	9.708	19.76
SDev	4.72	3.1	21.5	1.7	.038	2.172	1.74
%RSD	22.56	1.574	5.280	.8246	.3921	22.37	8.780
#1	24.14	198.1	428.1	202.4	9.657	9.102	21.50
#2	23.06	201.2	408.4	205.5	9.635	12.12	18.03
#3	15.49	194.9	385.1	205.1	9.709	7.904	19.76
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass
Value	20.00	200.0	400.0	200.0	10.00	10.00	20.00
Range	50.00	50.00	50.00	50.00	50.00	50.00	50.00
Elem	Fe2599 ppb 209.7 1.8 .8695	Ni2316	Pb2203	Sb2068	Se1960	T11908	V-2924
Units		ppb	ppb	ppb	ppb	ppb	ppb
Avge		83.54	89.55	115.3	397.7	422.9	103.7
SDev		3.62	8.07	6.0	12.9	8.1	2.1
%RSD		4.336	9.015	5.229	3.247	1.915	2.035
#1	210.8	83.97	96.83	108.6	393.9	413.9	103.5
#2	207.6	79.73	90.94	117.0	412.1	425.6	105.9
#3	210.7	86.93	80.87	120.3	387.2	429.4	101.7
Errors	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	QC Pass	2C Pass
Value	200.0	80.00	100.0	120.0	400.0	400.0	100.0
Range	50.00	50.00	50.00	50.00	50.00	50.00	50.00

Method: COE Sample Name: 9602L964-023 Run Time: 02/20/96 19:30:02 Operator: PMP

Comment:

Mode: CONC Corr. Factor: 1

	Ba4934/	Be3130/	cd2288 /	Cr2677 /
Units ppb J ppb ppb V	ppb 158.6 1.1 .6905	ppb .1309 .0268 20.49	ppb 10.90 2.60 23.82	ppb 295.7 2.2 .7520
#2 -2.304 520210.23	159.0	.1598	13.73	293.9
	159.4	.1067	8.631	298.2
	157.3	.1263	10.34	294.9
High 10000. 1000000. 100000.	LC Pass	LC Pass	LC Pass	LC Pass
	100000.	2000.	25000.	50000.
	-8,510	4600	-10.08	-14.99
Units ppb ppb ppb Avge 880.5 56.99 167.4 SDev 4.7 5.29 6.4	Sb2068 ppb 119.9 14.7 12.25	Se1960 ppb -20.19 20.65 102.3	Tl1908 ppb 22.92 23.54 102.7	V-2924 ppb 14.19 2.09 14.74
#2 884.6 62.74 161.8	104.5	1.401	1.698	14.93
	133.8	-22.21	48.24	11.83
	121.3	-39.76	18.82	15.82
High 250000. 200000. 250000.	LC Pass	LC Fass	LC Pass	LC Pass
	120000.	100000.	100000.	25000.
	-81.16	-116.5	-102.7	-12.04

Method: COE Sample Name: 9602L964-024 Operator: PMP Run Time: 02/20/96 19:33:32

Comment: Corr Factor: 1

Mode: C	ONC Corr.	Factor: 1					
Elem Units Avge SDev %RSD	Ag3280 ppb 3.584 .937 26.14	A13082 ppb 625.0 18.1 2.898	As1936 ppb .8505 5.776 679.2	Ba4934 ppb 26.43 .43 1.630	Be3130/ ppb .0334 .0064 19.07	cd2288 ppb .5815 1.798 309.2	Cr2677 ppb 9.737 1.767 18.15
#1	4.125	604.1	-4.643	26.56	.0261	2.633	7.809
#2	4.125	634.7	.3204	25.94	.0371	1694	10.12
#3	2.503	636.3	6.874	26.77	.0371	7195	11.28
Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass
High	10000.	1000000.	100000.	100000.	2000.	25000.	50000.
Low	-18.00	-111.8	-86.59	-3.510	4600	-10.08	-14.99
Elem Units Avge SDev %RSD	Fe2599 PPb 123.6 1.0 8133	Ni2316 ppb 5.381 5.792 107.6	Pb2203 ppb 51.73 13.20 25.52	Sh2068 / ppb 99.73 15.03 15.13	Se1960 ppb -25.11 20.45 81.46	T11908 ppb 6.115 24.41 399.1	V-2924 ppb 3.185 .894 28.08
#1	122.4	-1.225	49.24	93.48	-36.58	29.48	2.152
#2	124.1	9.586	39.96	116.9	-1.494	8.075	3.701
#3	124.2	7.784	66.01	83.77	-37.25	-19.21	3.701
Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC P233
High	250000.	200000.	250000.	120000.	100000.	100000.	25000.
Low	-14.73	-26.04	-96.86	-81.16	-116.5	-102.7	-12.04

Analysis Report QC Standard Tue 02-20-96 07:47:09 PM page 1

Operator: PMP

Method: COE Sample Name: ISB Run Time: 02/20/96 19:44:55

Comment:

Mode: CONC Corr. Factor: 1

	_							
Av SD	its ge	Ag3280 ppb 1028. 14. 1.368	A13082 ppb 510300. 5399. 1.058	As1936 ppb 956.0 45.2 4.733	Ba4934 ppb 482.3 5.5 1.147	Be3130 ppb 452.4 4.3 .9423	Cd2288 ppb 956.3 3.2 .3349	Cr2677 ppb 457.9 3.6 .7836
#1 #2 #3		1021. 1044. 1019.	507500. 516500. 506800.	975.3 988.3 904.3	479.7 433.6 478.5	450.4 457.3 449.6	955.1 959.9 953.9	457.5 461.7 454.6
٧a	rors lue	QC Pass 1000. 20.00	QC Pass 500000. 20.00	QC Pass 1000. 20.00	QC Pass 500.0 20.00	QC Pass 500.0 20.00	QC Pass 1000. 20.00	QC Pass 500.0 20.00
Un Av SD	em nits ge ev	Fe2599 ppb 185200. 19179810	Ni2316 ppb 394.0 15.9 1.790	Pb2203 ppb 917.9 16.4 1.792	Sb2069 ppb 1010. 21. 2.032	Se1960 ppb 593.8 3.4 .9370	T11908 ppb 979.0 10 1.017	V-2924 ppb 477.5 3.4 .7224
#1 #2 #3	?	184200. 187300. 134100.	875.7 905.1 901.1	922.4 931.7 899.7	1001. 995.7 1034.	906.6 889.9 899.3	973.7 972.8 990.4	477.0 481.2 474.3
٧a	rors lue inge	QC Pass 200000. 20.00	20 Pass 1000. 20.00	QC Pass 1000. 20.00	QC Pass 1000. 20.00	QC Pass 1000. 20.00	QC Pass 1000. 20.00	QC Pass 500.0 20.00

Tue 02-20-96 07:52:30 PM page 1 Analysis Report QC Standard

Operator: PMP

Method: COE Sample Name: CCV Run Time: 02/20/96 19:50:16

Comment:

Mode: CO	NC Corr.	. Factor:	1			•	\
Elem Units Avge SDev %RSD	Ag3280 ppb 499.6 3.3 .6532	A13082 ppb 5242. 39. .7438	As1936 ppb 10150. 93.	Ba4934 ppb 5073. 64. 1.261	Be3130 ppb 241.4 2.3 .9345	Cd2288 ppb 256.6 2.2 .8496	Cr2677 ppb 504.6 5.1 1.008
#1	496.2	5199.	10050.	5006.	238.9	256.5	498.7
#2	500.0	5252.	10200.	5079.	242.1	258.8	507.0
#3	502.7	5275.	10220.	5134.	243.2	254.5	508.0
Errors	QC Pass						
Value	500.0	5000.	10000.	5000.	250.0	250.0	500.0
Range	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Elem Units Avge SDev %RSD	Fe2599 ppb 5129. 42. 8237	Ni2316 ppb 2016. 18.	Pb2203 ppb 2538. 24. .9421	Sb2068 ppb 3082. 45. 1.451	Se1960 ppb 10100. 97.	T11908 ppb 9968. 353491	V-2924 ppb 2568. 22. .8436
#1	5083.	1996.	2514.	3031.	10020.	9973.	2545.
#2	5138.	2026.	2539.	3102.	10080.	10000.	2571.
#3	5167.	2027.	2562.	3114.	10210.	9931.	2588.
Errors	QC Pass	QC Pass	QC Pass	QC Fass	QC Pass	QC Pass	QC Pas.
Value	5000.	2000.	2500.	3000.	10000.	10000.	2500.
Range	10.00	10.00	10.00	10.00	10.00	10.00	10.00

Tue 02-20-96 07:56:02 PM page 1

Operator: PMP

Method: COE Sample Name: CCB V Run Time: 02/20/96 19:53:48

Comment:

Mode: CONC Corr. Factor: 1

Mode. Co.	110 0000						
Elem	Ag3280	A13082	As1936	Ba4934	Be3130	Cd2288	Cr2677
Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1.411	24.51	1.382	.7676	.0227	.7255	1.703
SDev	2.358	17.73	24.10	.5973	.0769	1.123	3.319
%RSD	167.1	72.32	1744.	77.82	339.2	154.7	194.9
#1	4.116	27.12	-20.04	1.112	.0791	1.491	4.339
#2	.3292	40.80	-3.293	1.112	.0538	1.248	2.796
#3	2117	5.628	27.47	.0778	0649	5631	-2.024
Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass
High	18.00	111.8	86.59	8.510	.4600	10.08	14.99
Low	-18.00	-111.3	-86.59	-8.510	4600	-10.08	-14.99
Elem	Fe2599	Ni2316	Pb2203	Sb2068	Se1960	T11908	V-2924
Units	ppb	ppb	ppb	ppb	ppb	ppb	ppb
Avge	1.712	-2.046	10.21	10.86	-28.74	14.84	3.341
SDev	1.450	5.070	17.82	8.28	17.93	9.70	1.882
%RSD	84.70	63.01	174.4	76.21	62.40	65.41	56.33
#1	3.384	-12.16	24.78	14.04	-11.65	25.89	5.259
#2	.8112	-9.591	15.52	17.09	-27.17	7.705	3.268
#3	.9399	-2.384	-9.651	1.468	-47.41	10.92	1.497
Errors	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass	LC Pass
High	14.73	26.04	96.86	81.16	116.5	102.7	12.04
Low	-14.73	-26.04	-96.86	-81.16	-116.5	-102.7	-12.04

Tue 02-20-96 07:57:56 PM page 1 Method Report Method: COE

STATUS INFORMATION **

Version: 66.0 Date Created: 07/31/91 08:49 Date Last Updated: 02/20/96 06:40

Number of lines: 14 Number of elements: 14

of lines calibrated: 0

02/20/96 06:58 - 02/20/96 07:04 # of lines standardized: 14

Data collection mode: Spectrum Shifter <4 positions>

Approx. time for analysis 1.8 mins.

Protection status: Un-protected

METHOD INFORMATION **

Sample Introduction Device: Normal

Concentration Calibration Mode:

Default Setup:

Auto-store Analysis Data? Yes Number of Repeats : 3 Auto-store Stdzn Data?

Flush Time (sec) : 50.0 Store Individual Repeats? Yes Auto-Increment Sample Names? No

Auto-print Analysis Data? Yes

Auto-print Stdzn Report : +Readback

Condensed Print Format?

Default File Names:

Autosampler Table : COE Analysis Data File : PS0220B Sample Limits Table : LR846

Blank Limits Table : MB846 Calibration Data File : PSC220B Calibration Stds Table : PS0220B QC Check Table : CCV

INTERNAL STANDARDS INFORMATION **

				-
1 Time	Wavelength	Pre-integration	Integration 5.0	Used? Yes
Ratio Constant/In	tensity Multipl	ication Factor: .1		
<pre># Elem Symbol 2 Time</pre>	Wavelength	Pre-integration 0	Integration 5.0	Used? No
Ratio Constant/Ir	tensity Multipl	ication Factor: 1		
# Elem Symbol	Wavelength	Pre-integration	Integration 5.0	Used? No
3 Time Ratio Constant/Ir	ntensity Multipl	ication Factor: 1		
# Elem Symbol	Wavelength	Pre-integration	Integration 5.0	Used? No
4 Time Ratio Constant/I:	tensity Multipl	0 ication Factor: 1	3.0	110
# Elem Symbol	Wavelength	Pre-integration	Integration	Used? No
5 Time Ratio Constant/Ir	ntensity Multipl	ication Factor: 1	5.0	NO
# Elem Symbol	Wavelength	Pre-integration	Integration	Used?
6 Time	_	0 ication Factor: 1	5.0	No
,			•	
7 Time	Wavelength	Pre-integration 0	Integration 5.0	Used? No
Ratio Constant/I:	tensity Multipl	ication Factor: 1		

Tue 02-20-96 C7:57:56 PM page 3 Method Report Method: COE

OUTPUT INFORMATION **

Concentration Output Mode:

Override Print Limits? Yes Override Significant Figures? No Apply Background Correction? Yes Apply Blank Subtraction? No Check? Yes Limits Table: LR846

Correction Factor:

Report to:

Avgs Screen

Printer

Avgs, Stats, Reps, Errs, Units

PLASMA INFORMATION **

Gas Flow Rates

Torch gas flow : High Flow

Auxiliary gas flow: Medium (1.0 L/min)

Peristaltic Pump Parameters

Flush Pump Rate (RPM): 100

Relaxation time (sec): 0

Pump Tubing type : Tygon-Orange

Plasma Parameters

	Group	Group	Group	Group	Special
	#1	#2	#3	#4	Group
Approximate RF Power (W):	1150	1350	950	1750	1150
Analysis Pump Rate (RPM):	100	100	100	100	100
Nebulizer Pressure (PSI):	30	30	30	30	30

Method: COE

	method: Cos	HIEMERIC I.	11101111401011	140 02 20 3	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	2-30
\	Element: Wavelength:	Ag 328.068	A1 308.215/2 1	As 93.696 4	Ba 193.409 313.	Be .042
•	Element Name: Line Switch Conc: Peak SS Offset:	Ag3280 0 0	A13082 0 0	As1936 0 0	Ba4934 0 0	Be3130 0 0
	Timing Group No.:	1	1	1	1	1
	Print Limit Low: Print Limit High:	0	0	0	0	0
	Significant Figrs: Print Units:	ppb	4 ppb	4 ppb	4 ppb	4 ppb
	BKG Low SS Offset: BKG High SS Offset: BKG Element Name: BKG Factor:	NONE :15 n/a n/a	NONE 15 n/a n/a	NONE 15 n/a n/a	NONE 15 n/a n/a	-15 NONE n/a n/a
	Stdz. Method: Std #1 (High) Name: Conc/Sig: Std #2 (Low) Name: Conc/Sig: Std #3 Name: Conc: Std #4 Name: Conc: Std #5 Name: Conc:	SSO 0 S1A 250 S1B 500 S1 1000 n/a	S0 0 S1A 2500	S0 0 S2A 5000 S2B 10000 S2 20000	S0 0 S1A 250C S1B 5000 S1 10000 n/a	S0 0 S1A 125
	Y - intercept: Slope:	-2.91611 270.435	-34.114 763.398	173891 364.384	.077827 103.46	633313 7.73888
	Date Standardized: Time Standardized:		02/20/96 18:58	02/20/96 19:04		02/20/96 18:58
	Offset (A0): Gain (A1): Curvature (A2): Exponent (n):	0 1 0 1	0 1 0 1	0 1 0 1	0 1 0 1	0 1 0
	Max. Inflection:	NONE	NONE	NONE	NONE	NONE
	Date of Fit: Time of Fit:	NC FIT	NO FIT	NO FIT	NO FIT	NO FIT
	Use IECs: Number of IECs:	YES 2	YES 1	YES 3	NO C	YES 1

					F
Method: COE	Element	Information	Tue 02-20-96	07:57:56 PM	
Affecting Element:	Fe2599	V-2924	A13082	n/a	V-2924
k1 factor:	00008	03048	.0037	n/a	.00286
k2 factor:	0	O	0	n/a	0
use?:	YES	YES	YES	n/a	YES
Affecting Element:	V-2924	n/a	Fe2599	n/a	n/a
k1 factor:	0082	n/a	.0001	n/a	n/a
k2 factor:	0	n/a	0	n/a	n/a
use?:	NO	n/a	YES	n/a	n/a
Affecting Element:	n/a	n/a	V-2924	n/a	n/a
k1 factor:	n/a	n/a	.01617	n/a	n/a
k2 factor:	n/a	n/a	O	n/a	n/a
use?:	n/a	n/a	YES	n/a	n/a
Element:	Cđ	Cr	Fe	Ni	Pb
Wavelength:	228.802/2	267.716	259.940 23	1.604/2 220	.353
Element Name:	Cd2288	Cr2677	Fe2599	Ni2316	Pb2203
Line Switch Conc:	0	0	0	O	0
Peak SS Offset:	0	0	0	O	0
Timing Group No.:	1	1	1	1	1
Print Limit Low: Print Limit High:	0	0	0	c c	0
Significant Figrs:	4	4	4	4	4
Print Units:	ppb	ppb	ppb	ppb	ppb
EKG Low SS Offset:	:15	-15	-15	-15	-15
BKG High SS Offset		NCNE	NONE	NONE	NONE
BKG Element Name:		n/a	n/a	n/a	n/a
BKG Factor:		n/a	n/a	n/a	n/a
Std #1 (High) Name Conc/Sig: Std #2 (Low) Name: Conc/Sig: Std #3 Name: Conc: Std #4 Name: Conc:	0 S1A 125 S1B 250 S1 500	Multiple S0 0 S1A 25C S1P 500 S1	Multiple S0 0 S1A 2500 S1B 5000 S1 1000C n/a	Multiple S0 C S1A 1000 S1B 2000 S1 4000	Multiple S0 0 S1A 1250 S1B 2500 S1 5000
Std #5 Name: Cond:	n/a n/a	n/a n/a	n/a	n/a	r./a

	Method: COE	Element I	nformation	Tue 02-20-96	07:57:56 PM	page f
\	Y - intercept: Slope:	1.20062 227.562	.867927 95.4082	346711 64.3303		-7.12228 420 .207
)	Date Standardized: Time Standardized:	02/20/96 19:58	02/20/96 18:58	02/20/96 18:58	02/20/96 18:58	02/20/96 18:58
	Offset (A0): Gain (A1): Curvature (A2): Exponent (n):	0 1 0 1	0 1 0 1	0 1 0 1	0 1 0 1	0 1 0 1
	Max. Inflection:	NONE	NONE	NONE	NONE	NONE
	Date of Fit: Time of Fit:	NO FIT	NO FIT	NO FIT	NO FIT	NO FIT
	Use IECs: Number of IECs:	YES 1	NO O	NO 0	NO O	YES 1
	Affecting Element: k1 factor: k2 factor: use?:		n/a n/a n/a n/a	n/a n/a	n/a n/a n/a n/a	A13082 .0013 0 YES

Method: COE	Flemenc	111101			
Element: Wavelength:	Sb 206.838	Se 196.026	Tl 190.864/2	V 292.402	
Element Name: Line Switch Conc: Peak SS Offset:	Sb2068 0 0	Se1960 0 0	T11908 0 0	V-2924 O O	
Timing Group No.:	1	1	1	1	
Print Limit Low: Print Limit High:	0	0	0	0	
Significant Figrs: Print Units:	4 ppb	4 ppb	4 ppb	4 ppb	
BKG Low SS Offset: BKG High SS Offset: BKG Element Name: BKG Factor:	:15 n/a	-15 NONE n/a n/a	NONE 15 n/a n/a	NONE 29 n/a n/a	
Std #1 (High) Name: Conc/Sig: Std #2 (Low) Name: Conc/Sig: Std #3 Name: Conc: Std #4 Name: Conc:	:S0 0 S1A 1500 S1B 3000 S1 6000	S2B 10000 S2 20000 n/a	S0 0 S2A 5000 S2B 10000 S2 20000	S0 0 S1A 1250 S1B 2500 S1	
<pre>T - intercept: Slope:</pre>	12.234 139.403	-22.4428 337.359		4.15295 110.652	
Date Standardized: Time Standardized:	02/20/96 18:58	02/20/96 19:04	02/20/96 19:04	02/20/96 18:58	
Offset (A0): Gain (A1): Curvature (A2): Exponent (n):	0 1 0 1	C 1 0 1	0 1 0 1	0 1 0 1	
Max. Inflection:	NONE	none	NONE	NONE	
Date of Fit: Time of Fit:	NO FIT	NO FIT	NO FIT	NO FIT	
Use IECs: Number of IECs:	YES 3	YES 1	YES 2	77.3 1	

Method: COE	Element	Information	Tue 02-20-96	07:57:56 PM	page 8
Affecting Element: k1 factor: k2 factor: use?:	As1936 .00008 0 YES	Fe2599 00026 0 YES	Fe2599 .00133 0 YES	Fe2599 .000075 O YES	
Affecting Element: k1 factor: k2 factor: use?:	00843	n/a n/a n/a n/a	.0018 0	n/a n/a n/a	
Affecting Element: k1 factor: k2 factor: use?:	00143	n/a n/a	n/a n/a n/a n/a	n/a n/a	



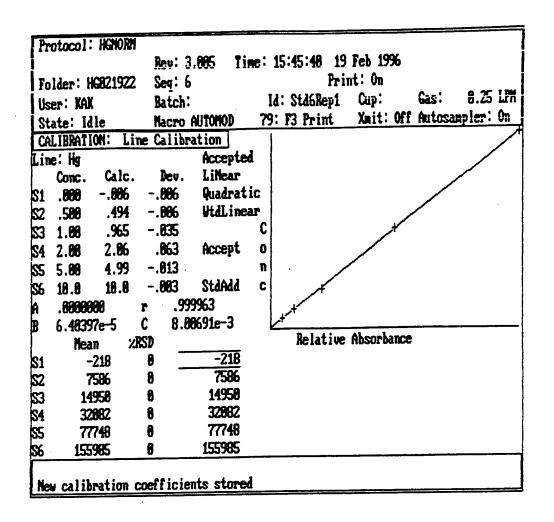
Mercury

15:3	51:16 19 Fe	eb 1996	Fold Prot	er: ocol:	HG021922 HGNORM	2		Pa	ge 1
Line	conc.	Units	SD/RSD	1	2	3	4	5	
***	Standard:	1 Rep:	1	Seq:	ø _.	15:31:16	19 Feb	1996 HG	
Hg	.000	ppb	-218 Ave. Int. =	-2	218 S. D.	, =	0		
***	Standard:	2 Rep:	1	Sea:	1	15:34:07	19 Feb	1996 HG	
Hg	.500	ррь	7586 Ave. Int. =	75	586 S. D.	, =	0		
***	Standard:	3 Rep:	1	Sea:	2	15:36:58	19 Feb	1996 HG	
Hg	1.00	ppb	14950 Ave. Int. =	149	750 S. D.	, =	0		
***	Standard:	4 Rep:	1	Seq:	3	15:39:49	19 Feb	1996 HG	
			32082 Ave. Int. =						
***	Standard:	5 Rep:	1	Sea:	4	15:42:40	19 Feb	1996 HG	
Hg	5.00	ppb	77748 Ave. Int. =	777	748 S. D	=	ø		
***	Standard:	6 Rep:	i .	Seq:	5	15:45:32	19 Fet	1996 HG	
Hg	10.0	ppb	155985				_		

155985 S. D. =

Ave. Int. =

H621922 2/20196 2/20196 96095-CRA, MBI, LCI, LC3 96021964-004, 005, 008-010, 013-015, 078-021, 023-026



Line	Conc.	Units	SD/RS	SD C	1	2	3	4		5	
Line Hg Q	Flag	%Rcv. 101.	Found 5.05	True 5.00	Units ppb		.000				
*** Ch	Flag -	Found Ra	1 Ck1 ange(+/-) .200	Units	9	D/RSD	15:51:12	19	Feb	1996	HG
*** Ch	neck St Flag	%Rcv.	2 Ck2 Found 5.07	True	Units		15:54:01 SD/RSD .000	19	Feb	1996	HG
*** Ch	neck St Flag	andard: Found Ra .007	1 Ck1 inge(+/-) .200	Units ppb	Seq: S	9 SD/RSD .000	15:56:49	19	Feb	1996	HG
	ample I .232			C0095-	-CRA	10	15:59:36	19	Feb	1996	HG
	ample I			C0095-	-MB1		16:02:21	19	Feb	1996	HG
	ample I 4.87	D: ppb		C0095-			16:05:06	19	Feb	1996	HG
	ample I 4.95	D: ppb		€095- 4	-LC2	13	16:07:52	19	Feb	1996	HG
	ample I			02L964	1-004	14	16:10:38	19	Feb	1996	HG
	imple I		96 .000	02L964		15	16:13:24	19	Feb	1996	HG
	imple I		96 .000		Seq: 1-005R .138	16	16:16:10	19	Feb	1996	HG
*** Sa	mple I	D:	96	02L964	Sea: 1-005S		16:18:56	19	Feb	1996	HG
Hg	1.13	ppb	.000	1	1.13 -						

16:3	21:42 19	7 Feb 1998		Folder: Protocol:			•		Page
Line	e Cond	. Units	SD/RSD	1	2	3	4	5	
	Sample		96021 .000	L964-005T		16:21:42	19 Feb	1996	HG
•	Sample	ID:		Seq: L964-008		16:24:28	19 Feb	1996	HG
*** Line	Flaç	Standard: %Rcv. 100.	2 Ck2 Found Tru 5.01 5.0	ue Units		16:27:16 SD/RSD .000	19 Feb	1996	HG
*** Line	e Flag	Found Ra	1 Ck1 ange(+/-) Un: .200 pp	175	עכא /עו	16:30:04	19 Feb	1996	HG
	Sample			L964-009	22	16:32:51	19 Fet	1996	HG
***	.041 Sample	ID:			23	16:35:36	19 Fet	1996	HG
***	Sample	ID:		L964-013	24	16:38:20	19 Feb	1996	HG
	Sample	ID: ppb		Sea: L964-013R .020		16:41:04	19 Feb	1996	HG
	Samole		96021 .000	Seq: L964-013S .907	26	16:43:48	19 Feb	1996	H6
	Sample .870		96021 .000	Sea: L964-013T .870	27	16:46:32	19 Fet	1996	HG
	Sample		96021 .000	Seq: L964-014 .176	28	16:49:16	19 Feb	1996	HG
*** Hg	Sample	ID:	96021 .000	Seq: L964-014R .165 -	29	16:52:00	19 Fet	1996	HG

9602L964-025 .000 .030 -

dqq 020. pH

Page Folder: HG021922 Protocol: HGNORM 17:27:34 19 Feb 1996 Line Conc. Units SD/RSD 1 2 Seq: 42 17:27:34 19 Feb 1996 HG *** Sample ID: 9602L964-026 Ho .054 ppb .000 .054

*** Check Standard: 2 Ck2 Sec Sea: 43 17:30:20 19 Feb 1996 HG True Units SD/RSD 5.00 ppb .000 Line Flag %Rcv. Found 96.5 4.83 HQ CB Seg: 44 17:33:09 19 Feb 1996 HG *** Check Standard: 1 Ck1 Line Flag Found Range(+/-) Units SD/RSD .007 .200 ppb .000 Hq



Digestion Log

085

SAMPLE DIGESTION RECORD

WESTON®

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Logoook # ACOURT Method (elrele) CLP (SW846) Received By^b: OP / Method #: 21-15 - 3020. Matrix (circle) Soll H₂O Other ATR Relinquished By Type of Prep.". ICA Parameters: 5b, As, Bo, Be, Cd, Cr, Pb, NT, Se, Pg, TI Digestion Batch #: 96L0322 COE-HOT GA SH H Cllent: Spike Witnessed By: Not wailable Date/Time Completed 2/17/96 1900 Date/Time Initiated: 2/16/96 13:00 Analyst:_

١.					-	3	<u>>><</u>	بَيْ	·` ⁷	آ زنن نو	? <u>`</u>													
	Turbidity																							
50 60, 3	Artifacts	76/11/2·M									-				34-38	1 M	D							
OP / Method #: 21-/5 - 5020, 3	Colos/Appearance	C/O FACTUR		0,1103	0.1093	0.1246	0.152.0	0,1500	0.1580	0,1520					Apol # 4493 pages	だら	D							
- OP / Meth	Texture			,											so hook	M-mpr-Wi				1 16	76/[1]	s/		
	Total/ Solubie		TOTAL	_						7				,	Lee also				111		/			
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	%Solids																	1111	# 444VI	77 / 6				
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Cinci ii.	Intitial WT/Vol.																							
	. Spike Info.		•									•	Interpression	4						-				
	RFW #	1-19672096	800	013	810	120	£20	F29	520.	920	-2259776	(gw)	137	737										

Reagent/Standard & Lot Expiration & Preparation information on Page ____001

* for SW-846 ICP/FLAA batches, specify method 3005 or 3010 b include date/time of transfer

RFW 21-21-018/B-08/95

Reviewed By/Date WallSMU

Page #

MERCURY PREPARATION WESTON® Instrument ID: Ht 2. Prep Batch: Analyst: Worksheet: Balance #: Date: OP: 07 Start Time/Temp: End Time/Temp:

No (If no; Container Number	Spike Info	Initial Wt	Final Sample	Comments,
7	<u> </u>	(g or mL		% Solids, etc.
t		33,m	1 33ml	
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3,03,8				Samples
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76				
1508				
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) 	KNOOL
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142	1. Ouall			
	nowje-	MNt	nuad in book	स २,३९३
	1508 140 140 159 0111 16X 1103 139 101 35P	1208 1208 140 5.0 mg/L 140 0 2 mg/L 150 0 2 mg/L 160 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	300 3028 Db 7G 1308 60 5.0ught 140 Daught 190 Daught 100 Jught 100 J	300 3028 Db 76 1208 60 5.0ugil 140 15 02ugil 6C 1 16x 11ml 102 33ml 126 12ugil 60 3.33ml AT 11ml B2 33ml 35F 33ml

Prep Date/Time Expir Date ID Standard: 12/96 ICAL/MS **High Purity** Inorganic Ventures 11/14/96 ICV/CCV/LCS

Reviewed By/Date:

(Soil LCS = Buffalo River Sediment) RFW 21-21L-018/H-12/95

099 Page #

146

WESTON®

MERCURY PREPARATION

4120.0		Logbook # 5363
Analyst: Claule	Instrument ID: H62.2 Balance #: (NA)	Prep Batch: 960095 Worksheet: 146021922
Start Time/Temp: 133000	Balance #:(/NA)	OP: <u>21-15-0245.1 Rev. 0</u>
End Time/Temp: 153090°C		and inhibite on SDE

pH < 2 for Liquids? Yes	No (If no;	designate affe	ected samples	in Comments co	olumn, and initiate an SDR
RFW #	Container Number	Spike Info	Initial Wt. or Volume (g or mL)	Final Sample Volume (mL)	Comments, % Solids, etc.
9602L964-013T	V	1,0,491	3.33ml	33 ml	14202
-014	UX		11ml		THUCH
-014'E	YG				
-0145	2	1. augl			
-014T	1109	1	7 0		<u> </u>
-015	70		33ml		7+00
-018	165		3,33ml		H202
-014	<u> </u>		Ilml		KWO1
-000	OK.		35M4		4CQ
-Od1	76		3.55m		H2O2
-Ua3	103		33 ml		Cimp
7024	thas				
~\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	3X				
-Vau	_SA				
		#			
		16	tocic		
				State	9/

Standard:	ID	Prep Date/Time	Expir Date	
	High Purity	199110955	12/96	
ICV/CCV/LCS	Inorganic Ventures	21,919,10955	11/14/96	

Reviewed By/Date:

(Soil LCS = Buffalo River Sediment) RFW 21-21L-018/H-12/95

MULTI-METALS DIGESTION LOG (AIR: Stationary Source Metals)

Analyst:
Sample # 002 Sample # N/A Sample # 001 Filter 0.425 g Acetone N/H mL Nitric Rinse // mL mL g Particulates? Y / N C/D FACTUR = 0.1500 (metals + H5) g Final Volume Fraction I ISO mL (combined digestate) Fraction Ia 100 mL (metals) FILTER IN BUMB # 4782-5 Fraction Ib 50 mL (mercury)
BACK HALF NITRIC (Fraction II) Sample # 003 Volume Received Fraction III
COMMENTS: 655 (B.N. 44) is travaish puple. Could be KMarcy.
Date/Time: Paris 1950 -Reviewed By:

MULTI-METALS DIGESTION LOG (AIR: Stationary Source Metals)

Analyst: Multiple 13:00 Notebook # 4493 RFW Number: 96021964 Page # 35 Run Number: 5.8.)
Sample # 007 Sample # 1006 Filter 0.389 g Acetone 10/11 mL Nitric Rinse 20/20 mL g Particulates? Y / N c/0 FALTER = 0.1500 (metals + 1/3) g Final Volume Fraction I 150 mL (combined digestate) Fraction Is 100 mL (metals) Fraction Is 50 mL (mercury)
BACK HALF NITRIC (Fraction II) Sample # 008 Volume Received 200 ml ml
Completed by: J. May Well Reviewed By:
Date/Time: 1900 Date: 2/22/5

RFW 21-21-018/G-02/92

MULTI-METALS DIGESTION LOG (AIR: Stationary Source Metals)

Analyst: WWW. Date/Time: 2/16/96 13:00 RFW Number: 96021964 Run Number: 2	Notebook # <u>4493</u> Page # 36
Sample # 017 Sample # N/A Sar Filter 0.405 g Acetone N/A mL Nitr g Particulates? Y / N C/D	ic Rinse <u>15)</u> mL = 0.1500 (mitals + Hz) & in bumb wp # 4782-7
Fraction IIb 50 mL (mercury) 100, 10	elvolume (Iuf)
BACK HALF KMnO ₄ (Fraction III) Sample # 014 Volume Received 390 mL c/0 = 0.3900 Fraction III 390 mL (mercury)	B.H. HC1 SAMPLE # 015 VOL. REC'O 226 ml c/0=0.2260
COMMENTS: B.H. HCI is bown. Could be Kmnoy	
Completed by: 1. 144 1100 - Reviewed Date:	By: <u>mys</u> _2/22/96

WESTON®

MULTI-METALS DIGESTION LOG (AIR: Stationary Source Metals)

Analyst: W.W
Run Number: Run 3
Sample # 010 Sample # 017 Sample # 010 Filter 0.406 g Acetone N/A mL Nitric Rinse 150 mL g. Particulates? Y / N 90 = 0.1570 (Mutal + Hz) — g FILTER IN BUMB CUP # 4782-8 Final Volume Fraction I 150 mL (combined digestate) Fraction Ib 50 mL (mercury)
BACK HALF NITRIC (Fraction II) Sample # ## ## 018 Volume Received 589 mL
Volume Received 396 mL dD=0.3960 UOL. RELID 0229 mL Fraction III 396 mL (mercury) CD=0.2290 217176
COMMENTS: 018,016 - no tylon tape around bottle hid (017,018,0020 too) B.H. HCI in brown. could be KMACY
Completed by: Alley Will - Reviewed By: 43 Date: 2/27/96

RFW 21-21-018/G-02/92

MULTI-METALS DIGESTION LOG (AIR: Stationary Source Metals)

Analyst:						
FRONT HALF (Fraction I) Sample # ML Nitric Rinse ML g. Particulates? Y/N N/N YW 2/N/9c g. Final Volume Fraction I ML (combined digestate) Fraction Ia ML (metals) Fraction Ib ML (mercury)						
BACK HALF NITRIC (Fraction II) Sample # 02/ Volume Received 253 mL Cln= 0.124L (match) Fraction IIa 203 mL (metals) 0.7530 (lkg) Fraction IIb 50 mL (mercury) 100 ml final and min (Ica) BACK HALF KMnQ (Fraction III) Sample # Volume Received mt NA Machine						
Completed by: Alam Mill Reviewed By: Date/Time: 217146 1900 Date: 2122 94						

RFW 21-21-018/G-02/92

WESTON®

ICP RUN LOG X LOGBOOK # 5340 PAGE # 6

DATE: 0211196 STANDARD: H.P. IIN

PEAK PROFILE: 10036975

ANALYST: Mag PREPARER: Mas INCTRIMENT ID: IC3 TIME PREPARED 10:30 SPECTRAL SHIFT: 579 UNITS: _____ @ TIME: 12:00

110: <u>123</u>		ME PREPARED	10	.50		011110.	@ TIME: 12700
DIGEST BATCH	CLIENT	RFW NUMBER	# OF SPLS	METH FILE	FILE TRANS. TO LIMS	REPRO- FILE (Y/N)	COMMENTS
9610308	Brehtel	9 6 <i>091.09</i> 4	0045	Cu	(IC3, 1),	(Y)	NO RELUM
					7 100	Jid in	
9610322	COE- HOT GAS	i	P18.021	1	(IC3.2)		No Resun
				ļ		2-20	
9610334	Shelwin Williams	96021756	014	РР	(=c3:3)	(4)	No Resur
961.0333	\	9621126	₩		احسا	1 1	1
			016	RiS			l <u> </u>
9610327	PADER	96021.976	1V.C	ZN o8	(I C3·4)		NO RESUM
		<u> १</u> ६व्यक्ष	003 005 011		UPdated	2200	
i /				·			
	راعي	2					
	Bros 2						
	0						
	96L0322 96L0334 96L0327	DIGEST CLIENT P610308 BYCHTH 9610322 COE- HOTGAS 9610334 SHELWITH WILLIAMS 9610327 PADER	DIGEST BATCH CLIENT REW NUMBER 9610308 BYCHT & 96021004 9610322 COE-HOT GAS 96021126 9610334 Shelwin 96021126 9610327 PADER 96021976 96021992	DIGEST BATCH CLIENT RFW NUMBER SPLS 9610322 COE-HOTGAS SECRESCY OR DISTRICTURE 9610334 Shelwin 96021126 39C OIL 9610333 96021126 39C OIL 9610327 PADER 96021976 39C OIL 96021992 003 005 OIL	DIGEST BATCH RIM SPLS METH SPLS PLS FILE 9610308 Brichtel 96021024 0045 CM 9610322 COE-HOTGAS 96021364 008 013 PR. 001 18 PR 014 18 PR 015 18 PR	DIGEST CLIENT REW # OF METH FILE TRANS. TO LIMS 9610322 COE-HOTGAS 96021964 39C COE PSZ PRN ————————————————————————————————————	DIGEST CLIENT RFW NUMBER SPLS FILE TRANS. REPROPORTION OF PLE TO LIMS (Y) 9610308 Brental 96021024 0045 CM PSI.PRN (Y) 9610322 COE-HOTGAS 96021964 008 AS COE PS2.PRN (Y) 9610334 Shelwin 96021126 3 QC PB PS3.PRN (Y) 9610333 96021126 0014 PB PS3.PRN (Y) 9602192 003 9602192 003 96021992 003 96021992 003 96021992 003 96021992 003 96021992 003 96021992 003 96021992 003

RFW 21-21-020/D-01/92

REVIEWED BY/DATE Z/2./74

ICP RUN LOG

LOGBOOK # 5340

PAGE #

STANDARD: H.P. JI.V. DATE: 02/20/96 PREPARER: Max ANALYST: PMP

PEAK PROFILE: __O.012.

SPECTRAL SHIFT: 584

NSTRUMENT	ID: IC3	TIP	ME PREPARED	, 17:	00		UNITS:	@ TIME:00: IS
DATA FILE	DIGEST BATCH	CLIENT	RFW NUMBER	# OF SPLS	METH FILE	FILE TRANS. TO LIMS	REPRO- FILE (Y/N)	COMMENTS
950220A	9610326	TRC	96021955	RIC	4	PSA.PRN (IC3.1)		No Return
				016 016	,R,S	undered	2-20-96	196
								[] .
P50220B	9610322	COE+HOT Gas	960ZL964	023 024	COE	PSB.PRN (IC3.2)		No Resun
	·					mene way	9 MP	,
950220C	9610328	usace Nowis	96021890	3 QC 006	Zn	(IC33)	(4)	No Resun
							2-20-96	
950220D	9610346	Shetwin Williams	96021133		Pb	PSD-PRN (IC3.4)	(A)	No Resur
	96L0345	T	960ZL133	¥.	I			
				020 016,L,R	ک ر			
. :								
		Surger 1	96					
		10V						
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RFW 21-21-020/D-01/92

REVIEWED BY/DATE MY 2

WESTON®

STANDARDS PREPARATION: DAILY ICP SOLUTIONS

و المراجعة																					-					-
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Lot # Lot # KME Batics # K		7	7	1	7	٦	?	7	7	1	/	7	7	١	7	7	ن	7	٦	/	1	7	د	7		
STD 5	/ n	1/11	1/4	1//10	1/6/1	11/11	<i>h/</i> lo	NIN	MIN	6/1/4	1/4	11/11	RIN	4/4'	1/4	912	10/10	4/6	11/4	AIR	1/1	¥12	M_{ν}	ν/υ		
-	SE,	1/4	"1/a	11/4	"/L	"/u	1/4	NIR	MIG	1/4	1/9	1/4	MIA	1/4	1/9	57	۸/۰۴	1/11	17/12	417	n/4	MIR	$\nu \gamma_{\nu}$	h/v,		
STD 25% IN LANGE STD	XWE 65 2	/	7	7		11 SURIN	٦	7	7	7	7	ر	/	ر	7	7	L	7	ز	7	7	7	7	7		
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WESTON®

STANDARD PREPARATION: DAILY ICP SOLUTIONS

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			-	•			-		

3 Padded J.V. K-PO1079 16V

PFW # 21-21-008/1-03/92

PAGE () 0.47

Reviewed by/Date

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PAGE #

RFW # 21-21-008/1-03/92



End of Data Package

HEXAVALENT CHROMIUM

RESEARCH TRIANGLE INSTITUTE



Center for Environmental Measurements and Quality Assurance

February 21, 1996

Mr. Jeffrey D. O'Neill Roy F. Weston Inc. 1 Weston Way West Chester, PA 19380

Dear Jeffrey,

Enclosed are the Cr(VI) analysis results as determined by ion chromatography using ultratrace mode for the impinger samples received on February 6, 1996 for RTI Project No. 91C-4848-02Q, Roy F. Weston WO# 02281-012-012-1200.

If you have any questions, please call me at 919-541-6569 or Peter Grohse at 919-541-6897.

Sincerely,

Kate K. Luk, Ph.D.

kkl

Ref: 91C-4848-02Q cc: W. Gutknecht

P. Grohse

C. Decker

N. Singleton



TECHNICAL REPORT

Client: Roy F. Weston Inc.

Purchase Order No.: Work Order No. 02281-012-012-1200

RTI Project No.: 91C-4848-02Q

Date: February 21, 1996

Ву

Kate K. Luk

Submitted to:

Mr. Jeffrey D. O'Neill Roy F. Weston Inc. 1 Weston Way West Chester, PA 19380

INTRODUCTION

Five impinger samples were received under Work Order No. 002281-012-012-1200 on February 6, 1996 for ultratrace hexavalent chromium analysis.

ANALYSIS

The samples were analyzed as follows:

Digestion Method - N/A

Instrumentation - Dionex IC

Measurement Method - IC/PCR

QA/QC - Duplicates, spikes, blanks, calibration check solutions were used

RESULTS

See Tables No. 1, 2, and 3.

COMMENTS: No problems encountered.

SAMPLE CUSTODY: Samples will be kept for 3 months after report is delivered.

RTI Project No.: 4848-02Q

Samples: Impinger Samples

Company: Roy F. Weston (WO# 02281-012-012-1200)

Analyte: Cr(VI)

Method of Analysis: Ion Chromatography / Post Column Reaction

Sample Received Date: 2-6-96

Report Date: 2-21-96

Table 1. Results for Cr(VI) Samples

Sample	Total Volume L	Cr(VI) ug/L	Total Cr(VI) ug
COE-HG-AFT-OUT-CR6-R1-KOH	0.989	62.0	61.3
COE-HG-AFT-OUT-CR6-R2-KOH	0.940	67.5	63.5
COE-HG-AFT-OUT-CR6-R3-KOH	1.006	47.5	47.8
COE-HG-OUT-CR6-SB-H2O	0.284	< 0.15	< 0.043
COE-HG-OUT-CR6-SB-KOH	0.292	2.40	0.701
		0.45	

Detection Limit 0.15

Note:

Total Cr(VI), ug = Cr(VI), ug/L x Total volume, L

RTI Project No.: 4848-02Q

Samples: QC for Impinger Samples

Company: Roy F. Weston (WO# 02281-012-012-1200)

Analyte: Cr(VI)

Method of Analysis: Ion Chromatography / Post Column Reaction

Sample Received Date: 2-6-96

Report Date: 2-21-96

Table 2. Calibration Check Sample

Sample	Cr(VI) ug/L Measured	Cr(VI) ug/L Expected
QC	2.08	2.00
QC	2.01	2.00

Table 3. Results of Blank, Duplicate, and Spike Analysis

Sample	Cr(VI) ug/L Measured	Cr(VI) Spike ug/L Measured	Cr(VI) Spike ug/L Expected	Cr(VI) Spike Recovery,%
RTI-DIW	< 0.15			-
COE-HG-CR6-R1-KOH DUP	63.2			
COE-HG-CR6-R3-KOH SPK		2.29	2.50	91.6

COE-HG-CR6-R1-KOH = COE-HG-AFT-OUT-CR6-R1-KOH COE-HG-CR6-R3-KOH = COE-HG-AFT-OUT-CR6-R3-KOH

EXPLOSIVES

EXPLOSIVES: COMPLETE SDG FILE (CSF) INVENTORY SHEET

LABORATORY NAME:	Roy F. Weston, Inc., Analytics Division	
CITY/STATE:	Lionville, PA	
CASE/SDG NO.:	96021916	
CLIENT NAME:	COE-AAR HOT GAS	
WORK ORDER NO.:	03281-012-012-1200	
METHOD BASED ON:	SW8330 -Explosives By HPLC	

All documents in the Client's copy of the complete SDG file must be legible, clearly labeled, paginated, single-sided original documents; or of sufficient copy quality to be reproducible to fourth generation copies. (Purge file documents, e.g., original-copy chain-of-custody, etc. assembled per specific contract request only.)

CLIE	NT:	Page N	los	Check (initials/d	date)
SDG	No.:	From	То	Lab	Client
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	Sample Tags, if applicable		į		
	Airbills		<u> </u>		
5	Explosives Sample Data/QC Summary	143	phy.	1 OV aboles	
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	BS/BSD Summary (Form III)		İ	1 470 E	
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ļ	Chromatograms/Quant Reports, Primary column		İ	THAT!	
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l	Continuing: Chromatograms/Quant Reports	1/		12/20/90	
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Cover Page (Lab Chron)

Roy F. Weston, Inc. - Lionville Laboratory 8330 ANALYTICAL DATA PACKAGE FOR COE-HOT GAS

CLIENT ID	RFW #		мтх	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
AFTOUT-EXP/SV-R1-CND	004		AI	96LLC013	01/31/96	02/07/96	02/08/96
IN/OUT-EXP/SV-SB-ACE	006			96LLC017	01/31/96	02/08/96	02/09/96
IN/OUT-EXP/SV-SB-CND	009		AI	96LLC013	01/31/96	02/07/96	02/08/96
AFTIN-EXP-R1-CND	013		AI	96LLC013	01/31/96	02/07/96	02/08/96
AFTIN-EXP-R1-CND	013	01	AI		01/31/96	02/07/96	02/08/96
AFTIN-EXP-R1MS-CND	018		AI	96LLC013	02/01/96	02/07/96	02/08/96
AFTIN-EXP-R1MS-CND	018	01	AI		02/01/96	02/07/96	02/08/96
AFTOUT-EXP/SV-R1-FB	020		AI	96LLC017	01/31/96	02/08/96	02/08/96
AFTOUT-EXP/SV-R1-FX	021		AI	96LLC014	01/31/96	02/07/96	02/08/96
IN/OUT-EXP/SV-SB-FX	022		AI	96LLC014	01/31/96	02/07/96	02/08/96
AFTIN-EXP-R1-FB	023		AI	96LLC017	01/31/96	02/08/96	02/09/96
AFTIN-EXP-R1-FB	023	01	AI		01/31/96	02/08/96	02/08/96
AFTIN-EXP-R1-FX	024		AI	96LLC014	01/31/96	02/07/96	02/08/96
AFTIN-EXP-R1-FX	024	01	AI		01/31/96	02/07/96	02/08/96
AFTIN-EXP-R1MS-FB	025		AI	96LLC017	02/01/96	02/08/96	02/09/96
AFTIN-EXP-R1MS-FX	026		AI	96LLC014	02/01/96	02/07/96	02/08/96
AFTIN-EXP-R1MS-FX	026	01	AI		02/01/96	02/07/96	02/10/96
3 QC:				·			
BLK	MB1	•	AI	96LLC013	N/A	02/07/96	02/08/96
BLK .	MB1 BS		AI	96LLC013	N/A	02/07/96	02/08/96
BLK	MB1		AI	96LLC017	- N/A	02/08/96	02/09/96
BLK	MB1 BS		AI	96LLC017	N/A	02/08/96	02/09/96
BLK	MB1		AI	96LLC014	N/A	02/07/96	02/08/96
BLK					•		



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Case Narrative



LIONVILLE LABORATORY ANALYTICAL REPORT

Client: COE-HOT GAS

W.O:02281-012-012-1200-00

RFW#: 9602L916

Date Received: 02 February 1996

EXPLOSIVE

1. The set of samples consisted of four (4) air samples collected on 31 January 1996 and 01 February 1996. Each sampling train consisted of three fractions: condensate, solid (filter / XAD), and solvent; each fraction was analyzed and reported individually.

- 2. The samples and their associated QC samples were prepared on 07,08 February 1996 and analyzed by methodology based on EPA method 8330 on 08,09,10 February 1996.
- 3. The sample ID's for this set of samples were modified (truncated) to accommodate EPA nomenclature, which allows twenty (20) characters on Organic CLP forms.
- 4. All required holding times for extraction and analysis were met.
- 5. All initial calibrations associated with this data set were within acceptance criteria.
- 6. All continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.
- 7. Laboratory control limits were not available for assessing surrogate and spike recoveries for the procedures used to prepare these samples.
- 8. Tetryl was not recovered from the blank spike (96LLC017-MB1 BS) associated with the solvent matrix.
- 9. All samples associated with 'AFTIN' (afterburner inlet) required dilution due to the presence of high levels of target analytes.
- 10. Relatively low 1,3,5-Trinitrobenzene and Tetryl recoveries were observed for the blank spike (96LLC014-MB1 BS) associated with the solid matrix.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 225 pages.



- The follwoing solvent samples required two-fold dilutions due to immiscibility with acetonitrile:
 - 1. IN/OUT-EXP/SV-SB-ACE
 - 2. AFTIN-EXP-R1MS-FB
 - 3. 96LLC017-MB1
 - 4. 96LLC017-MB1 BS

für J. Michael Taylor

Vice President and Laboratory Manager

Lionville Analytical Laboratory

Date

cs/jkd/misc/02-916.ex

WESTERN.

GLOSSARY OF EXPLOSIVE DATA

DATA QUALIFIERS

- U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

11 LU 1 U 11 - U 4.11 p. U 2.		L / /	SUN #.	14.01.0
Initiator: K.Baker	DEW Batch	96021916,943	Parameter:	ALL
	Samples:	ALL	Matrix:	AIK
	Method:		Prep Batch:	
Client: AARY HOFGAS				
b. General Discrepancy Missing Sample/Extract Hold Time Exceeded Improper Bottle Type Note': Verified by [Log-In] or [Prep G	Container Broke Insufficient Sam Not Amenable to Group] (circle)signature	Wrong Test Code Wrong S ple O Analysis /date: s; attach data if necessary	ample Pulled tion Wrong y)	Label ID's Illegible Received Past Hold
2. Known or Probable Causes		1		
·				
3. Discussion and Proposed A	ction Oth	ner Description:		
Re-log	1000	•	The A China	ا معد الديد
Entire Batch	· <u>X</u>	change matrix to air.	where appropriately	phace
Following Samples:		- L niv	•	
Re-leach		to air.		
Re-extract				
Re-digest				
Revise EDD Change Test Code to				
Change Test Code to Place On/Take Off Hold (i	circle)	•		
		hala allelat		
4. Project Manager Instruction	iSsignature/date:	- 17 mm 2/14/14		
X Concur with Proposed Ac	ction			
Disagree with Proposed /		ON		
Include in Case Narrative				
Client Contacted:				•
Date/Person		_		
Add Cancel				
5. Final Actionsignature/date: Verified re-[log][leach][ext	tract][digest][analysi	کراچه Other Expla is] (circle)	nation:	
Included in Case Narrative	•			
Hard Copy COC Revised				
Plectronic COC Revised				
EDD Corrections Complet		OA Canadalles	4 distribution or	_d Alina
When Final Action has been r				
Route Distribution of Complete	<u>∌d</u> SDR		ion of <u>Completed</u>	
X Initiator	• • · · · • • • · · · · · · · · · · · ·		ils: Reichner/Doug ganic: Perrone/Leo	
X Lab Manager: J. M	ichael laylor	(C)	janic: Perrone/Lei LC: Jarvis/Skrzat/	yraius Yechneli
X Project Mgr:	/Puda /Daziele	GO/	LU. Jaivis/Unizzi/ I aMin/Mcintyre/T	aylor/Kasdras/Steele
X Section Mgr: Siery			in: Geiger	aylor/ racores, siss
X QA Section Mgr. D X QA File: Feldman/F			: Miller	4
X Data Reporting: So			in Brewer/Keehn	/Edainaton
Sample Pren: Osail		Othe		,



Shipping, Receiving, and Custody Record

CIO 一 381 596a 4) Unbroken on Sample Y or N COC Tape was:

1) Present on Outer
Package Y or (N) 3) Present on Sartipha Y or N Package Y or N 2) Unbroken on Outer COC Record Present Upon Sample Rec't るすれてい **WESTON Analytics Use Only ₹** 7 とだる Samples way

1) Shipped X or
Hand Delivered
Airbit # 044.00.00 3) Received a Good Properly Preserved

(Y) or N Custody Transfer Record/Lab Work Request Holding Tippes 5) Received Within 4) Labels Indicate Cooler# WESTON ANAMYTICS USE Only Discrepancies Between Samples Labels and COC Record? You NOTES: OUE 449 huncided premID traces medated in huckent consume 40 0) Les GIS EN STURES OF THE STORY OF THE S A STATE OF THE STA BOG PCB N N XXXXX ORGANIC >> Time احادلد رسهر 8015. DATE/REVISIONS: Analyze AOV Date Liquid Solid Llquid Date Time Collected Collected Solid ٤, ع EPA Received 15/18/1 1/31/9 #/Type Container á COT-COPECDE-HO-TWOT-ENTV-SD-FILTERIC COT-COPECDE-HO-TWOT-ENTV-SB-HID VO WHI FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

DATE: PERSONNEL: COMPLETE ONLY SHADED AREAS ANALYSES REQUESTED Refrigerator # Preservatives Ŕ REPORT I Volume -COE-H6-AFTOX- FXY/10- PO-1545AK Matrix OF HG-AFTONT-EXPSG-PC-FH5PhY Relinquished MICOE HG-APPON-ENIXY POLITICA Cho Cho Z MS MSD 1201 *RDX, HMX, Tetry 1, 2, 4-DNT, 2,6-DNT, NO; 1,3-DNB, 1,3,5-TNBS 2,4,6-TNT 000 000 - CDE-HO-INOJT-ENEW-SB-3000 Se Se Time Client ID/Description Pole Due 3 1-01-WA DOCUSATIONAL 14 Project Contact/Phone # _ 6/10p. 7 Date くいからいか Gerpuck #3 10514245 GAVES Est. Final Proj. Sampling Date Work Order # 022 81-WESTON Analytica Use Only Client COE - HOT ٥ Date Rec'd A 2 9V AD Project Manager L. EPITCLP
Leachaide
WI. Wipe &C
X. Other
F. Fish Special Instructions: oc san Relinquished St. - Sludge W - Water O - Oil Account # 80 - Solid MATRIX CODES:

COC Record Present Upon Sample Rect 3) Present on Sample Arbill 1998 3634 Package Y of N Sample Y of N 940 4) Unbroken on Package Y o **WESTON Analytics Use Only** 7637188988 **304**万 73 <u>ح</u> ⊀ * \$108 Ambient Chilled Properly (Verenad Y) or N 3) Received in Good Condition Y or N 5) Received Within Holding Times Samples were 1) Shipped or 4) Labels Indicate **WESTON Analytics Use Only** <u>ئ</u> 3 - S にたい Explosives - APT・エルレドア Custody Transfer Record/Lab Work Request SAMPLE X POR and Samples Labels and COC Record? Y of N NOTES: Cherated - Scarce X 01100 Ref# EPA BOIG - Select ris 8330 willing TA COSTON L378 P. IMLET BCB Herb of 3 yst fres for lower wabon 2 MAY BE LANG (J) |校 Conception ANB Combass L377 462//96 8 AOV Date Liquid Liquid Collected Collected Solid 1 AUS. 96 L375 Received #/Type Container DATE/REVISIONS: ANALYSES REQUESTED Refrigerator # Preservatives 3 CDE-146-MPTEN-EXMIN-GWONTHIN SUNG XXX NGCDE-HOMETRY-EXP-IRING-IA-18-1 OLYCORE HO-MATEN-EXP RIMY-1045 Volume Leachair 044 CDE-145 APT TW-EXP-110 - 1245 AV Matrix とこ CLA COE-HG-AFTINEX/19/X40 -L373 Relinquished by Chosen (5) 2,6-DWT; NG; 1,3-DNB; 1,3,5-TNB; 2,4,6-TNT * RDX; HMX; Tetry1; 2, 4-DUT OLIS CONE-HO-APTTEN-EXP-RIPHE 018 COE-146-1499772- FIX KIN 16 m 1957 X L372 0001-DE-HEAFTEN-EN FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS Client ID/Description COE HOTSAS 2256 Est. Final Proj. Sampling Date
Work Order # 02281-02.0/2 Date Project Contact/Phone # J. O.Me./ 1,3,5-TNB; * Analyze AD Project Manager Krales WESTON AND LESS USE ONLY 90 RPW 21-21-001/A-7/91 Date Rec'd _ & 8. Soil 8. Soil 8. Soil 8. Soil 8. Soil 8. Soil 9. Soi MATRIX CODES: Ž×" نہ

Manual Page						NORG	CO	se Use Only		300×100 top		\$00+ €40	1010 + 010	911 4014	0/S+0/9	410+010		WESTON Analytics Use Only	Samples were: COC Tape was:	1) Shipped or 1) Present on Outer Hand Delivered Package Y or N	Airbill # 2) Unbroken on Outer	3 Present on San	Property Preserved Saraple Y or N	5) Received Within Uppar Sample Rec't Holding Times Y or N	Cooler# 381-596a
Custody Transfer Record/Lab Work Request							фэн	WESTON Analytics Use Only	08330	7		7	7	. 7	7	7		SM uco SEA 210	0.0	on al samile	# 9FPMVGK	5,000 ten ,000 s		Discrepancies Between Samples Labels and COC Record? Y or N NOTES:	L378 Ref#
cord/Lab Wo		Liquid	Solid	Liquid	2000	ORGANIC	NOA BNA Pesiv		Time ollected	7	7	7	7	\ \ \	/ / N	/ / / / / /		DATEMENSIONS: 1 1 10 1 10 1 1 1 1 1 1 1 1 1 1 1 1 1	NOTE OUR GIRCAN MODE	1 1912	Fig. 2030	9		Date Time	75
ansfer Red	Refrigerator #	#Tvpe Container		Volume	Preservatives		ANALYSES REQUESTED	,	an Matrix Collected Collected	Air Jalah					Ju // Ju	1-144-1		PATE/REVISIONS:	CV CV	21, 4he3 (100)	0 1111	++1		Relinquished Received by by	L373 L375
[]	0 E HO T 6 MS	Ing Date	<u></u>	1 0 000 W	A Jan	1 TAT	Date Due	2	Client ID/Description Chosen (~)	1	AETOUT-EXPISA-RI-FX	INJOUT-EXPISY-SBEX	AFTIN-EXP.RI-FB	AFTIM-EXP. RI-FX	RETIN-EX P.RIMS. F.B	36 AFTIN EXP-RIMS-FX		FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS Special Instructions:	ra. Filst RHS Pringlette.	A 250 K-10/20 2 11/21 12/2	トンドフニングラント	2/20/96 Coverted Dak collected on		by Date Time Reling	1372
WESTON Analytics Use Only ウルクロン	Cilent (1)	Est. Final Proj. Sampling Date	Work Order #	Project Contact/Phone	AD Project Manager	OC De	Date Rec'd Account #	MATRIX	Ser Sold ID SOLD SOLD SOLD SOLD SOLD SOLD SOLD SOL	930	\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \	Solide	Liquids 33	मुरु श्र	×	अट		FIELD PERSONNEL: CC	7.8. 17.15.	11/2	121 121	2/20/96 Con	Dellamilehad	常	HFW 21-21-001/A-7/91



Explosive Sample QC/Data Summary

Roy F. Weston, Inc. - Lionville Laboratory

Explosives by HPLC / Method 8330

†TO Page: Report Date: 02/15/96 11:00 AFTIN-EXP-R1 total ug 1.00 018 M8-CND AIR 7. Work Order: 02281-012-012-1200-00 AFTIN-EXP-R1 total ug 5000 013 DL AIR 5000 11000 Ş Ω AFTIN-EXP-R1 Þ 100 total ug 013 AIR 220 1400 Ę IN/OUT-EXP/8 V-8B-CND 1.00 total ug 600 AIR 7.7 1.0 74 IN/OUT-EXP/8 V-SB-ACE 2.00 total ug 900 AIR Client: COE-HOT GAS Cust ID: AFTOUT-EXP/S V-R1-CND total ug 1.00 004 AIR 1.0 2.2 RFW#: Matrix: Units: 1,2-Dinitrobenzene D.F.: RFW Batch Number: 9602L916 Information Surrogate: Sample HMX RDX

ם

3.0 0.52 0.52 1.5

2500 2600 2600 7300 23000 2500 2500

600

0.50 0.52

0::50

1, 3, 5-Trinitrobenzene

1, 3-Dinitrobenzene

Nitrobenzene

Tetryl

0.52 0.52

52 52 囶

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23000 20

290

1.5 0.50 0.50

2.9

1.0

1.0 1.0

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0.50 0.50

1.0

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0.50

2,4,6-Trinitrotoluene 2,6-Dinitrotoluene

2,4-Dinitrotoluene

1.5

0.52

0.50 0.50 44

			>	\	7	\	>	
	Cust ID:	Cust ID: AFTIN-EXP-R1 MS-CND	AFTOUT-EXP/8 V-R1-FB	AFTOUT-EXP/8 V-R1-FX	IN/OUT-EXP/S V-SB-FX	AFTIN-EXP-R1	AFTIN-EXP-R1	
Sample	RFW#:	018 DL	020	021	022	023	023 DL	
Information	Matrix:	AIR	AIR	AIR	AIR	AIR	AIR	
	D.F.:	10.0	1.00	1.00	1.00	100	40000	
	Units:	total ug	total ug	total ug	total ug	total ug	total ug	
Surrogate: 1,2-Dinit	1,2-Dinitrobenzene	a Q	\$ 0 <i>L</i>	\$ 09	75 \$	a Q	3 Q	1
2016日11日11日11日11日11日11日11日1日日1日日日日日日日日日日			:cosflowszzzzzzzzf]***cozzzzzzzzz	**************************************	(=====================================	[Jensesseset]	necessarie []	
НМХ		_ 22 U	2.2 U	22 U	22 U	220 U	U 00088	
RDX		_ 10 U	1.0 U	10 U	10 U	390	40000 U	
1,3,5-Trinitrobenzene		D 0.3	0.50 U	5.0 U	5.0 U	170	20000 U	
1,3-Dinitrobenzene		5.2 U	0.52 U	5.2 U	5.2 U	52 U	21000 U	
Nitrobenzene		5.2 U	0.52 U	5.2 U	5.2 U	52 U	21000 U	
Tetryl		_ 15 U	1.5 U	15 U	15 U	150 U	58000 U	
2,4,6-Trinitrotoluene		40	0.50 U	5.0 U	5.0 U	32000 E	29000	
2,6-Dinitrotoluene		_ 5.0 U	0.50 U	5.0 U	5.0 U	50 U	20000 U	
2,4-Dinitrotoluene		_ 5.0 U	0.50 U	5.0 U	5.0 U	20 U	20000 U	

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked. I= Interference. NA= Not Applicable. *= Outside of Advisory limits. %= Percent recovery. D= Diluted out.

Roy F. Weston, Inc. - Lionville Laboratory

Work Order: 02281-012-012-1200-00 Explosives by HPLC / Method 8330 Client: COK-HOT GAS

RFW Batch Number: 9602L916

CI0

7

Page:

Report Date: 02/15/96 11:00

======E] 96LLC013-MB1 total ug 1.00 AIR 0.50 0.50 0.50 2.5 0.50 0.52 0.52 1.5 1.0 92 BLK ==£1== Þ Þ D AFTIN-EXP-R1 total ug 2.00 026 DL AIR 29 110 20 10 10 10 10 MS-FX Ω =====f] AFTIN-EXP-R1 Þ Þ Þ 闰 DD total ug 1.00 026 AIR 5.0 5.0 5.2 15 110 5.0 10 5.2 MS-FX 62 ==£1; AFTIN-EXP-R1 Þ Þ D D 2.00 total ug 025 AIR 2.0 1.0 1.0 2.9 1.0 1.0 1.0 1.6 MS-FB 4.4 70 ======E]== AFTIN-EXP-R1 Þ 100 total ug 024 DL AIR 520 520 4000 500 500 1000 500 1500 2200 -FX Д =======E]== Cust ID: AFTIN-EXP-R1 团 Þ D Þ total ug 1.00 024 5.0 AIR 5.2 3600 .,22 88 84 26 14 106 -FX Unite: 1,2-Dinitrobenzene RFW#: D.F.: Matrix: 1, 3, 5-Trinitrobenzene 2,4,6-Trinitrotoluene 2,6-Dinitrotoluene 2,4-Dinitrotoluene 1,3-Dinitrobenzene Information Nitrobenzene Surrogate: Sample Tetryl RDX HMX

	Cust ID:	BLK BS	BLK	BLK BS	BLK	BLK BS
Sample	RFW#:	RFW#: 96LLC013-MB1	96LLC017-MB1	96LLC017-MB1	96LLC014-MB1	96LLC014-MB1
101	D.F.:	1.00	2.00	2.00	1.00	1.00
	Unite:	total ug	total ug	total ug	total ug	total ug
Surrogate: 1,2-Dinit	1,2-Dinitrobenzene	74 \$	45 \$	26 🕏	\$ 99	74 \$
		:=====================================	cannuna contra	Tannamannett.	*nem===mem==ef]	iterates
НМХ		3 04	4.4 U	18	22 U	72
RDX		62	2.0 U	29	10 U	* 99
1,3,5-Trinitrobenzene		3 62	1.0 U	21 \$	5.0 U	26 \$
1,3-Dinitrobenzene		74 %	1.0 U	. 27	5.2 U	78 \$
Nitrobenzene		3 94	1.0 U	11,18 36	5.2 U	83 \$
Tetry1		88	2.9 U	Chalc. 0 + +	15 U	18 🕏
2,4,6-Trinitrotoluene		87 %	1.0 U	13 *	5.0 U	73 \$
2,6-Dinitrotoluene		82 *	1.0 U	23 🕏	5.0 U	\$ 78
2,4-Dinitrotoluene		80 -	1.0 U	21 \$	5.0 U	82 %

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked. *= Outside of Advisory limits. Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. اا

2F SOIL ORGANICS SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot No.: 9602L916

GC Column(1): OD5/DA ID: OD5/(mm)

GC Column(2): ID: OD5 (mm)

	CLIENT		1		2	1	1		2	•	1		,	TOT
	SAMPLE NO.	*REC	#	%REC	#	%REC	#	*REC	#	%REC	#	*REC	#	OUT
•	=======================================		==:		===		===	====:	==:		==		====	===
	AFTOUT-EXP/SV-R1-CND	72			ļ								ļ	. 0
	IN/OUT-EXP/SV-SB-ACE	68										ļ		0
03	IN/OUT-EXP/SV-SB-CND	74			ļ		ļ						ļ	0
04	AFTIN-EXP-R1-CND	D			l								Ì	0
05	AFTIN-EXP-R1-CND	D											ļ	0
06	AFTIN-EXP-R1MS-CND	84			ļ								ļ	0
07	AFTIN-EXP-R1MS-CND	D]						. !	0
08	AFTOUT-EXP/SV-R1-FB	70								_			. !	0
09	AFTOUT-EXP/SV-R1-FX	60					- }		'	-				0
10	IN/OUT-EXP/SV-SB-FX	75					1						. !	0
11	AFTIN-EXP-R1-FB	D												0
12	AFTIN-EXP-R1-FB	D			- 1									0
. 13	AFTIN-EXP-R1-FX	106												0
14	AFTIN-EXP-R1-FX	D										l		0
15	AFTIN-EXP-R1MS-FB	70										1		0
16	AFTIN-EXP-R1MS-FX	62								İ		l		0
17	AFTIN-EXP-R1MS-FX	D			- 1		- [ļ		0
18	BLK	76										1		0
19	BLKBS	74			1							İ		0
20	BLK	45					1							0
21	BLKBS	26												0
22	BLK	66												0
23	BLKBS	74												0
Ì				l					_	l		l		

ADVISORY QC LIMITS (1-999)

= 1,2-Dinitrobenzene

Column to be used to flag recovery values

* Values outside of QC limits

D Surrogate diluted out

No Control Limits Available

8rD 2/15/96

3F AIR ORGANICS BLANK SPIKE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Client : COE-HOT GAS

RFW Lot No.: 96LLC013-MB1

BLANK Spike - Sample No.: BLK

	SPIKE	SAMPLE CONCENTRATION	BS CONCENTRATION	BS %	QC
COMPOUND	ADDED (tot. pg	(tot. pg	(tot. pg	REC #	!
HMX	22.0	//	15 46 7 15	70	1-999
RDX	10.0	0 2	6.2	62	1-999
1,3,5-Trinitrobenzene	2.50	0	-2.0	79	1-999
1,3-Dinitrobenzene	2.50	. 0	1.8	74	1-999
Nitrobenzene	2.60	0	2.0	76	1-999
Tetryl	6.50	0	′ 5 . 7	88	1-999
2,4,6-Trinitrotoluene	2.50	0	2.2	87	1-999
2,6-Dinitrotoluene	2.60	0	2.1	82	1-999
2,4-Dinitrotoluene	2.50	0	2.0	80	1-999

[#] Column to be used to flag recovery value with an asterisk

Spike Recovery: 0 out of 9 outside limits

COMMENTS: No Control Limits Available

^{*} Values outside of QC limits

AIR ORGANICS BLANK SPIKE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Client : COE-HOT GAS

RFW Lot No.: 96LLC014-MB1

BLANK Spike - Sample No.: BLK

	\$1	10015/94		
SPIKE	SAMPLE A	BS	BS	QC
ADDED	CONCENTRATION	CONCENTRATION	ક	LIMITS
(tot. pg	(tot. pg	(tot. pg	REC #	REC.
220	0	0160	72	1-999
100	0	66	66	1-999
25.0	0	6.4	26	1-999
25.0	0	20	78	1-999
26.0	0	22	83	1-999
65.0	0	' 11	18	1-999
25.0	0	18	73	1-999
26.0	0	22	84	1-999
25.0	. 0	21 	82	1-999
	ADDED (tot. pg 220 100 25.0 26.0 25.0 26.0 26.0	SPIKE SAMPLE ADDED CONCENTRATION (tot. pg (tot. pg 220 0 25.0 0 26.0 0 25.0 0 25.0 0 25.0 0 26.0 0 26.0 0 26.0 0 26.0 0 26.0 0 26.0 0 0 26.0 0 0 26.0 0 0 26.0 0 0 0 0 0 0 0 0 0	ADDED CONCENTRATION CONCENTRATION (tot. pg (tot. pg 160 160 100 66 25.0 0 20 26.0 0 22 65.0 0 11 25.0 0 18 26.0 0 22	SPIKE SAMPLE BS BS ADDED CONCENTRATION CONCENTRATION REC # (tot. pg (tot. pg REC #

[#] Column to be used to flag recovery value with an asterisk

Spike Recovery: 0 out of 9 outside limits

COMMENTS: Control Limits Not Available

^{*} Values outside of QC limits

3F AIR ORGANICS BLANK SPIKE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Client : COE-HOT GAS

RFW Lot No.: 96LLC017-MB1

BLANK Spike - Sample No.: BLK

		Qw)	02/15/96		
	SPIKE	SAMPLE /S	BS	BS	QC
	ADDED	CONCENTRATION	CONCENTRATION	ક	LIMITS
COMPOUND	(tot. pg	(tot. pg	(tot. pg	REC #	REC.
	22.0		7 5	18	1-999
HMXRDX	10.0	0	2.9	29	1-999
1,3,5-Trinitrobenzene	2.50	0	0.52	21	1-999
1,3-Dinitrobenzene	2.50	0	0.68	27	1-999
Nitrobenzene	2.60	0	0.94	36	1-999
Tetryl	6.50	0	′ -0	0 *	1-999
2,4,6-Trinitrotoluene	2.50	0	0.32	13	1-999
2,6-Dinitrotoluene	2.60	0	0.60	23	1-999
2,4-Dinitrotoluene	2.50	0	0.52	21	1-999
		!			l

- # Column to be used to flag recovery value with an asterisk
- * Values outside of QC limits

Spike Recovery: <u>1</u> out of <u>9</u> outside limits

comments: Tetryl not recovered in K-D procedure

Recovery Limits Not Atailable

2/15/96

ORGANICS METHOD BLANK SUMMARY

	CLIENT	SAMPLE	NO.	
1				_
	n+ **			
	BLK		•	

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Client: COE-HOT GAS

Lab Sample ID: 96LLC013-MB1 Lab File ID: 02089646.04

Matrix: (soil/water) AIR Extraction: (SepF/Cont/Sonc) SONC

Sulfur Cleanup: (Y/N) _ Date Extracted: 02/07/96

Date Analyzed (1): 02/08/96 Date Analyzed (2): _____

Time Analyzed (1): 1204 Time Analyzed (2):

Instrument ID (1): 46 Instrument ID (2):

GC Column (1): <u>OD5/DA</u> ID: <u>OD5/(mm)</u> GC Column (2): ID: ____(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT	LAB	DATE	DATE
	SAMPLE NO.	SAMPLE ID	ANALYZED 1	ANALYZED 2
01	AFTOUT-EXP/S	9602L916-004	02/08/96	
02	IN/OUT-EXP/S	9602L916-009	02/08/96	
03	AFTIN-EXP-R1	9602L916-013	02/08/96	
04	AFTIN-EXP-R1	9602L916-013	02/08/96	
05	AFTIN-EXP-R1	9602L916-018	02/08/96	
06	AFTIN-EXP-R1	9602L916-018	02/08/96	
07	BLKBS	96LLC013-MB1S	02/08/96	

COMMENTS:		

4C ORGANICS METHOD BLANK SUMMARY

CLIENT	SAMPLE	NO.	
			i
BLK			
			_

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Client: COE-HOT GAS

Lab Sample ID: 96LLC014-MB1 Lab File ID: 02089646.11

Matrix: (soil/water) AIR Extraction: (SepF/Cont/Sonc) SONC

Sulfur Cleanup: (Y/N) _ Date Extracted: 02/07/96

Date Analyzed (1): 02/08/96 Date Analyzed (2): _____

Time Analyzed (1): 1421 Time Analyzed (2):

Instrument ID (1): 46 Instrument ID (2):

GC Column (1): OD5/DA ID: OD5/(mm) GC Column (2): ID: ____(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT	LAB	DATE	DATE
	SAMPLE NO.	SAMPLE ID	ANALYZED 1	ANALYZED 2
	==========			
01	AFTOUT-EXP/S	9602L916-021	02/08/96	
02	IN/OUT-EXP/S	9602L916-022	02/08/96	
03	AFTIN-EXP-R1	9602L916-024	02/08/96	
04	AFTIN-EXP-R1	9602L916-024	02/08/96	
05	AFTIN-EXP-R1	9602L916-026	02/08/96	
06 J	AFTIN-EXP-R1	9602L916-026	02/10/96	
07	BLKBS	96LLC014-MB1S	02/08/96	
i	•			

COMMENTS:	



ORGANICS METHOD BLANK SUMMARY

CLIENT	SAMPLE	NO.
1		
BLK	-	
1		-

Lab Name: Roy F. Weston, Inc. Contract: 2281-12-12

Client: COE-HOT GAS

Lab Sample ID: 96LLC017-MB1

Matrix: (soil/water) AIR

Sulfur Cleanup: (Y/N) _

Date Analyzed (1): 02/09/96

Time Analyzed (1): 1351

Instrument ID (1): 46

GC Column (1): OD5/DA ID: OD5/(mm)

Lab File ID: 02099646.16

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 02/08/96

Date Analyzed (2):

Time Analyzed (2):

Instrument ID (2):

GC Column (2): ID: ____(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

CLIENT	LAB	DATE	DATE
SAMPLE NO.	SAMPLE ID	ANALYZED 1	ANALYZED 2
	==========		========
01 IN/OUT-EXP/S	9602L916-006	02/09/96	
02 AFTOUT-EXP/S		02/08/96	
03 AFTIN-EXP-R1		02/09/96	
04 AFTIN-EXP-R1	9602L916-023	02/08/96	
05 AFTIN-EXP-R1		02/09/96	
06 BLKBS	96LLC017-MB1S	02/09/96	
i		İ	

COMMENTS:	



Analysis Run Logs

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WESTON®

86**T**

COLUMN TYPE: CALIBRATION STANDARD 461118 DETECTOR: #1 1650 DAD INSTRUMENT #: #PLC # (WAVELENGTH: __

ANALYST: S. LUMEBC ODS SEMX 4.6mm COLUMN SERIAL #: FLOW RATE: __ MOBILE PHASE: 541. 130, 32.71. Mush, 13.2%. ACN, O.1%. IPA @ 38°C SPIKING STANDARD __

OMMENTS										70 0
46124	oksso primary		•							7
STD 461118F STD 461118E STD 461118D	STD 461118B STD 461118A	ل ۱۶۰/ ۱۶۰		7 7 1	कर्माही					
01/24/96 16:23:23 01/24/96 16:43:07 01/24/96 17:02:54		11:16 "Kitishilly" 1/31/16			ν.	Les Muse	7.6			
4 .	= /									
	01249646.04 01249646.05 01249646.06								>	
01 03	05									

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9602L963-019 0au

02/08/96 18:36:39

RAW2: B8673067

02089646.23 02089646.24

RFW 21-21-022/B-01/92

9602L963-014

PAGE #

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HPLC ANALYSIS LOG

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ANALYST:	FLOW RATE:	COLUMN SERIAL #:	
MOBILE PHASE: See GIR.	7	COLUMN TYPE:	SPIKING STANDARD
VSTRUMENT #:	erector:	/AVELENGIH:	ALIBRATION STANDARD

ANA	ANALYSIS								Γ
DATE	TIME	NO.	ΣŎ	TRAY	RFW SAMPLE NUMBER	CLAS ID #	LOT ID #	COMMENTS	
25 26	02089646.25		RAW2: B8673074	73074	02/08/96 18:56:15	9602L963-024 5000			
27	02089646.27		RAW2: B8673083	73083	02/08/96 19:35:30	9602L916-018D1 IBLK			Ť
7 6 6	02089646.29		RAW2:B8673091 RAW2:B8673099	73091 73099	02/08/96 19:55:11 02/08/96 20:14:46	STD 461118D 9602L916-017D1 FGW	*		T
31	02089646.30 02089646.31		RAW2:B8673105 RAW2:B8673114	73105	02/08/96 20:34:22 02/08/96 20:54:01	9602L963-019D1 (VO			Ī
33	02089646.32 02089646.33		RAW2:B8673119 RAW2:B8673124	73119		9602L916-024D1 (00			 -
34	02089646.34		RAW2:B8673131	73131		INST. BLANK 9602L916-020	28z kg	-	T
36	02089646.36		RAW2: B8673145	73145		9602L916-023 James 40000 9602L963-030	4000		
	02089646.38		KAW2:B8673152 RAW2:B8673155	/3152 /3155	02/08/96 22:51:38	9602L963-032 5000	·		
4 39	02089646.39		RAW2: B8673166	3166		9602L963-034 5000			
41	02089646.4		RAW2:B9673178	3178	02/08/96 23:50:26 02/09/96 00:10:07	INST. BLANK STD 461118D			<u> </u>
	02089646.4		RAW2:B9673183 RAW2:B9673190	'3183 '3190	02/09/96 00:29:45 02/09/96 00:49:20	9602L963-034D1 60			ī
ナ サ フ	02089646.44		RAW2:B9673195	3195		STD 461118D (//	"		Ī
	7	3	701			25) 		Τ
		*	44.01			*Z	1		T

RFW 21-21-022/B-01/92

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HPLC ANALYSIS LOG MOBILE PHASE: INSTRUMENT #: DETE CALIE

			MUBILE PHASE:	ick page 1	ANALYST:		
TECTOR:) R .			2			i
WELER	VELENGTH:		COLLIMN TYPE		- ricow male:		1
LIBRAI	IBRATION STANDARD		SPIKING STANDARD		COLUMN SERIAL #:	RIAL #:	1
	SAMPLE ID	FILE ID,	DATE/TIME	DESCRIPTION AL	ī lO #	COMMENTS	
01	02099646.01 02099646.02	RAW2:B9673290 RAW2:B9673299	02/09/96 08:56:39	461118D			T
03	02099646.03 02099646.04	RAW2: B9673300 RAW2: R9673307		SID 461118D STD 461118D		DWG C 1 0 (1) 1461.	\top
05	02099646.05	RAW2: B9673311	02/09/96 10:15:18	9602L963-004 9602L963-009		Contido James (1) of the	I
0.0	02099646.06 02099646.07	RAW2:B9673322 RAW2:B9673324	•••	9602L963-014			
90	02099646.08	RAW2:B9673331	02/09/96 10:54:36 02/09/96 11:14:13	9602L916-023D1 (00 96LLC014-MB1S		10 46011416-006	T
10	02099646.09	RAW2:B9673337	_	96LLC017-MB1		570-911 1700h	
11	02099646.11	RAW2: B9673353	02/09/96 11:53:30 02/09/96 12:13:09	96LLC017-MB19 1		15, 46026963-056	
12	02099646.12 02099646.13	RAW2:B9673374 RAW2:B0673390	-	9602L916=035	2943-026	870-601512009- (1)	T
14	02099646.14	RAW2: B9673391	02/09/96 12:52:24 02/09/96 13:12:02	9602L963-026 2	711100	1 6 : 96 LCO17+MBI	T
16	02099646.15	RAW2:B9673399 RAW2:B9673415	02/09/96 13:31:43		(NUMBER STATES	-941C0174MB1	T
17	02099646.17	RAW2: B9673418		96LLC016-MB1			T
19	02099646.19	RAW2: B9673433	02/09/96 14:30:35 02/09/96 14:50:10	96LLC016-MB1S			T
20	02099646.20	RAW2:B9673439	-	9602L963-029			干
22	02099646.22	RAW2: B9673460	02/09/96 15:29:29	9602L963-031			T
23	02099646.23	RAW2:B9673464	02/09/96 16:08:43	9602L963-033 (00 9602L963-035 (00			T
	02033046.24	KAW2:B9673467	02/09/96 16:28:19				-
							h

RFW 21-21-022/B-01/92

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WESTON®	HPLC ANALYSIS LOG	
INSTRUMENT #:	MOBILE PHASE: Selage	ANALYST
DETECTOR:	P	FLOW RATE:
WAVELENGTH:	COLUMN TYPE:	COLUMN SERIAL
CALIBRATION STANDARD	SPIKING STANDARD	

ANALYST:	FLOW RATE:
) (

	COMMENTS																									BEVIEWED BY DATE (S. L. J. J. 100 / 10 / 9C	
	LOT ID #															2		2 2 2 2 3	Am/a	Q/mb						WINATE G. K	1.72/1
	CLAS ID #	9602L963-035D1	IBLK	STD 461118D	96LLC017-MB1A1	96LLC017-MB1SA	9602L916-006A1	9602L916-025A1	9602L963-026A1	9602L963-028A1	96LLC019-MB1	96LLC019-MB1S	9602L974-001 (00	9602L999-001 600	IBLK	STD 461118D	9602L999-002 [00	9602L974-001D1	9602L999-001A1	9602L999-002D1	9602L963-035D2 (0	96LLC018-MB1	96LLC018-MB1S	9602L952-001	9602L952-002	REVIEWED B	1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 /
	RFW SAMPLE NUMBER	02/09/96 16:47:56	02/09/96 17:07:34	02/09/96 17:27:15	02/09/96 17:46:51	02/09/96 18:06:27	02/09/96 18:26:04	02/09/96 18:45:42	02/09/96 19:05:19	02/09/96 19:24:54	02/09/96 19:44:29	02/09/96 20:04:06	02/09/96 20:23:44	02/09/96 20:43:21	02/09/96 21:02:57	02/09/96 21:22:38	02/09/96 21:42:15	02/09/96 22:01:53	02/09/96 22:21:31	02/09/96 22:41:09	02/09/96 23:00:43	02/09/96 23:20:20	02/09/96 23:39:58	02/09/96 23:59:36	02/10/96 00:19:12		
	INJ VOL NO.	67	RAW2: B9673489	RAW2: B9673495	RAW2: B9673499	RAW2: B9673513	RAW2:B9673517	RAW2:B9673524	RAW2:B9673535	RAW2:B9673539	RAW2: B9673550	RAW2: B9673560	RAW2:B9673569	RAW2:B9673577	RAW2:B9673581	RAW2:B9673591	RAW2: B9673604	RAW2:B9673612	RAW2:B9673622	RAW2:B9673633	RAW2:B9673641	RAW2:B9673645	RAW2:B9673658	RAW2: B9673663	RAW2:BA673672		
	25. S.O.	.25 RAW2			80									•									-		.48 RAW		
ANALYSIS	TIME	02099646.	02099646.26	02099646.27	02099646.2	02099646.29	02099646.30	02099646.3	02099646.32	02099646.33	02099646.34	02099646.35	02099646.36	02099646.37	02099646.38	02099646.39	02099646.40	02099646.41	02099646.42	02099646.43	02099646.44	02099646.45	02099646.46	02099646.47	02099646.	FW 21-21-022/B-01/92	
¥	DATE	25	3 6	27	28	59	30	.31	32	33	34	32	36	37	38	39	40	41	42	43	44	45	46	47	. 48	FW 21-21-0	

RFW 21-21-022/B-01/92

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INSTRUMENT #:

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ANALYST:

FLOW RATE: _

COLUMN SERIAL #:

COLUMN TYPE: MOBILE PHASE

SPIKING STAND 02/10/96 00 02/10/96 00 RFW SAM NUMBE

COMMENTS

	# OI ID #										
	CLAS ID #	9602L952-003	INST. BLANK	STD 461118D	9602L952-004	9602L952-005	9602L952-007	9602L952-008	9602L952-009	9602L952-010	9602L952-011
ANDARD	SAMPLE ABER	00:38:47	00:58:24	01:18:05	01:37:43	01:57:18	02:16:53	02:36:30	02:56:09	03:15:46	03:35:22

02/10/96 01

: 92

RAW2: BA673682 RAW2: BA673691

02099646.49 02099646.50

THAY

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₩ 8 9

TIME

DATE

ANALYSIS

CALIBRATION STANDARD

WAVELENGTH: DETECTOR:

02/10/96 02/10/96 02/10/96 02/10/96

RAW2:BA673712 RAW2:BA673717 RAW2: BA673724

55 26

54

RAW2: BA673703

02099646.52 02099646.53 02099646.54 02099646.55 02099646.56

02099646.51

RAW2: BA673693

i	Ξ	1 / M.R.	ļ							
	9602L952-013	9602L952-014	INST. BLANK	STD 461118D	9602L952-015	9602L952-015S	9602L952-015T	9602L952-016	INST. BLANK	GELLIAN GE
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	04:14:33	04:34:11	04:53:49	05:13:29	05:33:05	05:52:42	06:12:23	06:32:01	06:51:38	91.11.20

9602L952-012

03:54:56

02/10/96 02/10/96

02/10/96

RAW2: BA673743 RAW2: BA673749 RAW2: BA673753

02099646.57

57

02099646.58 02099646.59

58 59 9 61 62 63 64

RAW2:BA673734

02/10/96

02/10/96 02/10/96 02/10/96 02/10/96 02/10/96 02/10/96 02/10/96 02/10/96

RAW2: BA673765 RAW2: BA673770

02099646.60 02099646.61 02099646.62 02099646.63 SID 461118D となり <u>د</u>کو

07:11:18 06:53 02/10/96 02/10/96

RAW2:BA673810 RAW2:BA673815

RAW2: BA673805

02099646.67 02099646.68 02099646.69

02099646.65 02099646.66

65

02099646.64

RAW2: BA673788 RAW2: BA673792 RAW2: BA673797

RAW2: BA673781

RAW2:BA673774

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HPLC ANALYSIS LOG

INSTRUMENT #:		MOBILE PHASE:	See Proc 1	ANALYST:		702
DETECTOR:			a ,	FI OW RATE	•1	
WAVELENGTH:		COLUMN TYPE:		COLUMN SERIAL 4:	CDIAI 4:	
CALIBRATION STANDARD		SPIKING STANDARD				
ANALYSIS						
SAMPLE ID FILE	FILE ID	DATE/TIME	DESCRIPTION	FOT ID #	COMMENTS	
02109646.01	RAW2: BA673848,		STD 461118D			
02109646.02	KAW2:BA673863 RAW2:BA673869~	02/10/96 09:44:32 02/10/96 10:04:12	STD 461118D STD 461118D			
04 02109646.04 RAW2:BA673875 05 02109646.05 RAW2:BA673881	RAW2:BA673875 RAW2:BA673881	02/10/96 10:23:50 02/10/96 10:43:30	9602L952-005 9602L916-026D1	000		
02109646.06	A673891	02/10/96 11:03:11	9602L952-008	٦,		
08 02109646.00 RAWZ:BA673908	RAW2: BA673902 RAW2: BA673908	02/10/96 11:22:50	9602L952-015S ************************************	dell		
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	1					
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子におり INSTRUMENT #:

CALIBRATION STANDARD 46 (1 3/4102401) 254 MM H 1650 UV WAVELENGTH: __ DETECTOR:

HPLC ANALYSIS LOG

MOBILE PHASE: (10% 1/20/407. ACM

4 6 mm x 25cm COLUMN TYPE: Zurbax

FLOW RATE: LISMA COLUMN SERIAL #: _ ANALYST: __

SPIKING STANDARD

COMMENTS 7-4 orrob 06330 62266 41024011F STD 41024011E STD 41024011D 41024011C STD 41024011B STD 41024011A 279/47024011D 9601L838-002 9601L838-004 9601LB38-006 9601L838-008 9601L838-001 STD 461130D STD 461130E 461130C 461130B STD 461130F 461130A INST. BLANK STD 461130D STD STD STD STD STD 02/06/96 11:34:29 02/06/96 09:41:44 02/06/96 10:19:20 02/06/96 10:56:55 02/06/96 12:12:05 02/06/96 12:49:40 02/06/96 13:27:15 02/06/96 14:28:04 02/06/96 15:13:12 02/06/96 15:35:47 02/06/96 16:20:55 02/06/96 16:43:29 02/06/96 17:06:02 02/06/96 17:28:37 02/06/96 17:51:12 02/06/96 18:13:43 02/06/96 18:58:48 14:50:37 02/06/96 19:21:22 02706/26.22/20EE 15:58:21 , he will 02/06/96 96/90/20 Ç RAW2:B6672149 RAW2:B6672180 RAW2: B6672161 RAW2:B6672171 RAW2:B6672186 RAW2:B6672208 RAW2: B6672232 RAW2:B6672236 RAW2:B6672243 RAW2:B6672258 RAW2:B6672339 RAW2:B6672197 RAW2:B6672221 RAW2: B6672251 RAW2: B6672264 RAW2:B6672274 RAW2:B6672281 RAW2:B6672292 RAW2:B6672301 RAW2:B6672318 RAW2:B6672324 02069602.10 02069602.01 02069602.02 02069602.03 02069602.05 02069602.06 02069602.08 02069602.09 02069602.15 02069602.16 02069602.18 02069602.20 02069602.04 02069602.07 02069602.12 02069602.13 02069602.14 02069602.11 02069602.17 02069602.21 02069602.22 03 5 04 05 10 12 13 14 90 07 08 60 11 16

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HPLC ANALYSIS LOG

9	50			COMMENTS		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	OXA VZC/10 UNINOM	land H.	2 Just 627.01 E.	**************************************	TALEM (50 2/12/%	: -												
ANALYST:	FLOW RATE:	COLUMN SERIAL #:		T ID #												012/2/64	Š			2017	nah.			
Pace 8	ſ				STD 461130D STD 461130D	STD 461130D	D1	9602L916-013 500		9602L916-024D1 (0	9602L916-026 9602L963-019 IDA	9602L963-019D1 (000		9602L963-024D1 500	IBLK	STD 461130D	96021916-020 96021916-023 (00-	96021.916-02301	9602L963-030		9602L963-034 ÇO	10	9602L974-001 100	96021999-001 (60
MOBILE PHASE: Saplace 8		COLUMN TYPE:	SPIKING STANDARD	H E	02/09/96 15:20:12 02/09/96 15:42:49	02/09/96 16:05:26 02/09/96 16:29:37				02/09/96 17:59:57			02/09/96 19:30:15	02/09/96 19:52:49		02/09/96 20:37:56	02/09/96 21:23:05				02/09/96 22:53:17			02/10/96 00:00:53
			Q	FILE ID	RAW2: B9673457	RAW2:B9673463'' RAW2:B9673468	RAW2:B9673482	RAW2: B9673490	RAW2: B9673498	RAW2: B96/3510	RAW2: B9673525	RAW2: B9673536	RAW2:B9673545	RAW2:B9673555	RAW2:B9673566	RAW2:B9673572 RAW2:R9673580	RAW2: B9673594	RAW2: B9673607	RAW2:B9673617	RAW2: B9673625	RAW2:B9673640	RAW2:B9673644	RAW2:B9673657	RAW2:B9673666
INSTRUMENT #:	DETECTOR:	WAVELENGTH:	CALIBRATION STANDARD	SAMPLE ID	02099602.02	02099602.03	02099602.05	02099602.06	02099602.07	02099602.09	02099602.10	02099602.11	02099602.12	02099602.13	02099602.14	02099602.16	02099602.17	02099602.18	02099602.19	02099602.20	02099602.21	02099602.22	02099602.23	02099602.24
INSTR	DETE (WAVE	CALIBI	5	020	0 0	0.5	9 5	00	60	10	11	12	13	14	16	17	18	19	20	21	22	23	24

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FI OW BATE ANALYST: HPLC ANALYSIS LOG MOBILE PHASE: INSTRUMENT #: DETECTOR: CALIBR/ WAVELE

202

ERIAL #:		COMMENTS	
COLUMN SERIAL #:		# COT ID #	
		CLAS ID #	
COLUMN TYPE: SPIKING STANDARD		RFW SAMPLE NUMBER	
		TRAY NO	
		₹Ş	
(RD		NO.	
AVELENGTH:	NALYSIS	TIME	
AVELENGTH: ALIBRATION S	ANAL	DATE	

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9602L999-002

02/10/96 00:23:26 02/10/96 00:46:01

RAW2:BA673675 RAW2:BA673685

02099602.25 02099602.26 02099602.27

25 26 27 28

STD 461130D

02/10/96 01:08:34

RAW2:BA673692

IBLK

			10:00:40 07/04/10			
78	02099602.28	RAW2: BA673702	02/10/96 01:31:05			
29	02099602.29		02/10/96 01:53:36		-	
30	02099602.30	RAW2:BA673718	02/10/96 02:16:08			
31	02099602.31	RAW2: BA673727	02/10/96 02:38:42			
- 32	02099602.32	RAW2:BA673735	02/10/96 03:01:14	IBLK ///	3	-
33	02099602.33	RAW2: BA673746	02/10/96 03:23:46		. ,	
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WESTON®		HPLC ANA	HPLC ANALYSIS LOG		
INSTRUMENT #: DETECTOR:		MOBILE PHASE: SILL	xolage S	ANALYST:	806
WAVELENGTH:		COLUMN TYPE:		COLUMN SERIAL #:	RIAL #:
CALIBRATION STANDARD		SPIKING STANDARD		· ·1	
SAMPLE ID	FILE ID	DATE/TIME	DESCRIPTION AL	Attless or 10 *	COMMENTS
01 02109602.01	RAW2:BA673850 "RAW2:BA673060	02/10/96			
	RAW2: BA673872	02/10/96 10:11:41	STD 461130D		
04 02109602.04 05 02109602.05	RAW2:BA673878 RAW2:BA673889	02/10/96 10:34:19 02/10/96 10:56:54	9602L916-025 2		
06 02109602.06 07 02109602.07	RAW2: BA673898 RAW2: BA673909				
	RAW2:BA673915		9602L952-019	2017	
	RAW2:BA673924 RAW2:BA673929	02/10/96 12:27:11 02/10/96 12:49:46	9602L963-032D1 > 0.0 9602L963-034D1 > 0.0	3 6	-
11 02109602.11 12 02109602.12	RAW2: BA673936 RAW2: BA673947	02/10/96 13:12:22 02/10/96 13:34:57			
/					
	/				
		Adolar			
		A THE			
RFW 21-21-022/B-01/02			REVIEWED B	Y/DATE	REVIEWED BY/DATE (S. heinweln 2/12/96

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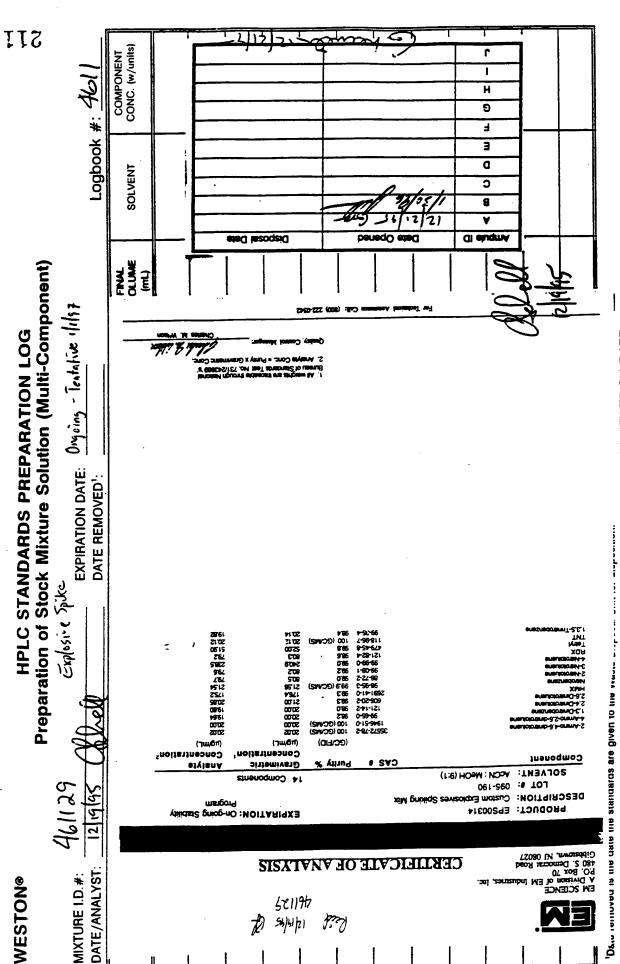
Standards Preparation Records

SIO COMPONENT CONC. (w/units) Disposal Date Logbook #: SOLVENT Date Opened E UME Preparation of Stock Mixture Solution (Multi-Component) Ampule ID ٥ ш Ø I REVIEWED BY/DATE: HPLC STANDARDS PREPARATION LOG A weights are transmine finducyh Makonas Igu od Signitarda Teak Mo. 731 gestiata Sonr weiwag Coro. e Purky x Gravernette Coro STANDARD **EXPIRATION DATE:** % PURITY DATE REMOVED1: Date removed is the date the standards are given to the Weste Disposal Unit for disposition. STOCK PARENT 0-62-625 7-52-65 7-52-61 7-52-61 1-62-65 7-22-68 0-11-168 7-22-69 7-11-121 0-93-65 7-12-225 7 620 628 628 628 628 628 628 628 628 986 980 980 980 100 (95,45) 100 (95,45) 100 (95,45) 100 (95,45) (mg/mr) Concentration Concentration Component # SYD Gravimetric Purity % Analyte SOLVENT: AcCN: MeOH (9:1) 15 Components # 107 866-380 DESCRIPTION: Custom Explosives Calibration Mix mangoria PRODUCT: EPS00872 EXPIRATION: On-going Stability Existing (allocation like EM SCIENCE
A Division of EM Indu
PO, Box 70
Cibbatown, NJ 08027 CERTIFICATE OF ANALYSIS DATE/ANALYST: WESTON® 811191 क्षित्व अंग्रास्ट कि

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WESTON®

HPLC STANDARDS PREPARATION LOGBOOK Preparation of Standard Dilutions (Single Component)

₹ 3 REMOVED! **3**2 Logbook #: REVIEWED BY/DATE 2/1/20 47/5 45/4 至 B DATE/ ANALYST 5/25/85 3 1,2//T 1 (B) 1 (B) 100 ing., 7% Eb 1000 ug/me Souplance 20 mg/m PREPARED STANDARD CONC. (w/units) -186 Section 1 Soctine Bolare HECH /ACT Herene SOLVENT A C S \mathbb{Z} ₹ <u></u> TOTAL VOLUME 25mC 10mC لح 7 4 ٦ سا Ť Σ ٤ 1250ul PARENT VOLUME 1×001 1 ١ (000mg/mt 00 mg/2 mg/2 PARENT CONC. (w/units) Acustanciand アメンジュラ 4102 1507 をあれる PARENT STANDARD 1.D. 7051 7017 かいいろらっしんか 261-52 たべいから いっつい 23-180 skan Stel 084-259 Accus H Accu Sty 255-230 055-314 41023807 41023862 402365 STANDARD DILUTION 41023805 4102804 41623408 4102303 70852014 1085201 018:2011 4(02381) Serbane rust i riphenylene COMPOUND MESSE FUEL 1,3-NB FROGUE 2 S-[NB Kensene

'Date removed is the date standards are given to the Waste Disposal Unit for disposition.

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HPLC STANDARDS PREPARATION LOGBOOK Preparation of Standard Dilutions (Single Component)

(C/// Ť c/ci Logbook #: 4002 DATE REMOVED' REVIEWED BY/DATE 2/4/ DATE/ ANALYST 000/ PREPARED STANDARD CONC. (w/units) 700) 886 283 22 8 000 <u>8</u> 330 2 12 CK/40 SOLVENT TOTAL VOLUME E) PARENT VOLUME PARENT CONC. (w/units) (24.511 (24.511 (24.511 (24.511) (21.5-266 14-23 14-23 GM X En C 6.5-152 アイスがの 四人と呼ばり 19-50 EM Signa 174-334 PARENT STANDARD からがんい 14-20 Hospitory 114-219 125-121 41023707 41075/01/2 41623904 41023910 41023708 1- Nito Havered 4/1023509 1102397 41023903 16295 410,2306 STANDARD DILUTION 41033701 <u>.</u> 1- Amino -2,6-NVT 3-11 hobblogue 3-Vithorblene J-A. 14- 46. DNT Nithokenzens COMPOUND 2,4-DNT 7,6-0VJ 邑 10 M

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Preparation of Stock Mixture Solution (Multi-Component) HPLC STANDARDS PREPARATION LOG

514

Loabook #: 461130 Explosive Conf. Mix EXPIRATION DATE: 6/1/96 MIXTURE I.D.#:

761

DATE/ANALYST: 13/9	1/3/96 (s. Limweber	DATE R	DATE REMOVED':			Logbook #	#
l =	DESCRIPTION	STOCK PARENT or NEAT	(nest only) (nest)	STANDARD WEIGHT/VOLUME (w/units)	FINAL VOLUME (mL)	SOLVENT	COMPONENT CONC. (w/units)
XMI		4102 3808	993 mg/mL	276.9 WL	SML	AcN	55 mmc
× C ×		41023805	186	136.9			7.0
LIST N. P.		462 3810	484	32.0			6.3
1,3- DNB		41023811	785	32.1			6.3
Nitrobenzene		41023501	1000	32.5			6.5
Tetry		41023902	000	64.0			8.8
TWO- 4,6 - DMT		41.23903	7 001	31.4			6.3
F2 F		41023905	1001	31.5	·		6.3
		7055201	1000	32.5			و ک
DAC DEC		41023907	7 886	31.9		_	6.3
							÷
					17	, ,	
	standards are given to the Wa	ste Disposal Unit for disposit				JEM 112411	9.
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HPLC STANDARDS LOGBOOK NEAT STANDARDS DOCUMENTATION

212 Logbook #: 402

S		7m/2, 000/	1005 5/m	T.	7m/c 05	<u> </u>				T	1003 7/2	
	DATE REMOVED'											
·	DATE RECEIVED	8 ब्रह्म	400	10/31/95	(0/3/185	chapiles-	Sylve-	dishlas	ddu/n5	Chesilos-	Childre	
	EXPIRATION DATE	95/1/6	Guigno	Unsoing	Cngoing		Cugoing				Ongoing	
	PURITY %			49.3	ì	1/66	78.7	\$	8	8	286	1
	VENDOR LOT ID	104.375	187-188	920 331	01/70	1/66 FZ #4097-X#	260~111	01-24531-50	HX-27456-49	HKY-27456-47 99	095-233 98.6 Orgoing	
	VENDOR	Enklighe BH8D80	Entooses Enscome	CIM Stience GPI 00134	EM Scieme	Radiun ERD-OGI	EMSCIENT	14n -005	Radian ERD-1913	Rodia. H	boustandard N-8330.55	
	WESTON STANDARD ID	410076/	41020792	411/20703	41424744	41020705	41628746	4142474	41020748	41020409	41020710	
CINICOMOC		Nondyerin	Fhylene Orde	7H-Dibenzo(c,g)carbazde	Dibeazo(a,h) pyrene	Dibenzo(a)i) pyrene	3 - Methyl cholanthrene	(Ryzul)Aluranthem	Dibenz(g,h) acrdine	Unenz (a)) accidine	1,2-Dintrobenzene	RFW 21-21-036/E-03/94

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'Date Removed is the date the standards are given to the Waste Disposal Unit for disposition.



Preparation of Standard Dilutions (Single Component) HPLC STANDARDS PREPARATION LOGBOOK

WESTON®	ď	HPLC STANDARDS PREPARATION LOGBOOK Preparation of Standard Dilutions (Single Compon	IDARDS F	PREPAR. Dilution	ATION s (Sing	ANDARDS PREPARATION LOGBOOK of Standard Dilutions (Single Component)	K nent)	r.	Logbook #216	4007
COMPOUND	STANDARD DILUTION I.D.	PARENT STANDARD I.D.	PARENT CONC. (w/units)	PARENT VOLUME (mL)	TOTAL VOLUME (mL)	SOLVENT	PREPARED STANDARD CONC. (w/units)	DATE/ ANALYST	REVIEWED BY/DATE	DATE REMOVED'
ROX	10042014	41020304	1002 yelled	272	1ml	ACN	عالي 30.70	-67 -15/hr/8		01/1/2
ROX	41024002	10042014	Auguso.ce	10001	In	ACN	2.705 mg/m	3/2/18		11/16/8
Picric Rid	41024003	41021708	7/ alol	1m1	(O.L	ACN	7/2 10	2%	9/5/45	
Piene Acid	41024004	4020609	200	7W/	Pml	ACN	7/1/200/	2.k	4/2/2	
7. H-dhared Cy) ande 41024005	41624005	41016703	Sb/Kh/	(
Triphenylen	9	411-019-19-19-19 1000 JMC 1350 mL	1000 us lone		DSML	Acn	50 mg/m/L 1	主意	28 N	
Triphenylene	tonh zilh	8061 2014	Sooyluc	Imt	100mc	ACN	Suglant	3 = 3		
MOTOR OIL	8001-201h	50102017					3	John	4	
1,2- DNB	500h z 11 h	41020710	1003	01810	7m0/	ACN	81243	12 6	35	
(-Terpheny)	41024010	39850363	UNIX	0,0125	Bant	LACTOR (1)	50 %L	75/200	1490	
4 - Nitrobalume	4 102 4011	41023909	1.0 mymL	1.0 myme 14.7ul	lmL	ACN	74. Tugime 2/1/96	कीया		

'Date removed is the date standards are given to the Waste Disposal Unit for disposition.

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Preparation Logs

RFW 21-21-019/Z-11/93

LC - GC - GC/MS EXTRACTABLES

	(mL)	Mtrx	рН	Initial Wt/Vol	Surr	Spike Mult		Split Mult	GPC	Acid Fraction or Pest/PCB or LC (Date/Time/Initials)
Block	Vol.I				1:0	بالمدينة	pec 10	2	Ŋ	Start time:
Block	(277)	w			1	1:00				End time:
	joke (70)			1	П				\sqcup	BN Fraction (Date/Time/Initials)
96021916-	ω4 (30°)	1			11					Start time:^\^\/A
	- cc9 (330)			i	\sqcap					End time:
	013*(400)	-1 1		1	1		L		1	
	C18(20)	4-							1	Extraction Information
		+			+				/,	(Date/Analyst)
		+	 		+-	1	1	/		Filtration:
		+	 	+	+-	1		1		Boildown:
					+	+				Blowdown:
					+-	17	4	1		GPC Ready:
				+	+-	*	1		1	GPC Cleanup:
		+	 	347	. / 	+-	+	1	1	GPC #:
			K	+ 35	+-	+-	-	+	+-	After GPC Boildown:
			1	*/	+	-	+	\dashv	1	After GPC Blowdown:
i 			+ 3	1	+-	+		_	+-	Acid/Florisil/Alumina Cleanup:
			1/3		+-	+-	+	+	+-	//_ ~
l 1		1/	4						+	Prep Sheet: 1/hum =
1		X_{-}					-		+-	GPC Lab ID #:
1										Florisil Lot #:
1										Florisil Lab ID #:
. /										
										* For Surr/Spike Mult, refer to Table 1 / 2 / 3 (circle on
!/										18010 1 / 2 / 3 (CRUS OF

SAMPLE EXTRACTION RECORD

Roy F. Weston, Inc. Lionville, Lab.

Sheet no.: Analyst: FK Extraction Batch No: 96LLC013

Extract. Date: 02/07/96

Method: ****

Analyst: Cleanup Date:

Client: COE-HOT GAS FACTOR c/p Y/N Solids Adsorbent: GPC Mult. Split Initial Surr. Spike Final Final VOL Mult. VOL WT/VOL Mult. Solvent: Hď Client ID Client Name LIMS Report Date: 02/15/96 Test: 0833 Sample No:

AFTOUT-EXP/SV-R1-CND IN/OUT-EXP/SV-SB-CND AFTIN-EXP-R1MS-CND AFTIN-EXP-R1-CND BLK BLK 96LLC013-MB1 0S 0 600 013 0 96LLC013-MB1 0 018 0 004 0

COE-HOT GAS

9602L916-

70 70 70 70

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10 10 10

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1.0

50 uL 41024009 Surrogate: Comments:

125 uL 461129B Spike:

Reason for Transfer		
Date Time		
Received By		
Date Time		
Relinquished By	M 196	15/16
Extracts Transferred		

l	A	I	F	S	T	0	N	ı,	
н	4		_	u		v		e.	•

LC - GC - GC/MS EXTRACTABLES

-1-6.									Logbook #: 2055
Extract Date: 2/7/96		Extra	action Ba	tch #	16	Wø	14_	_ SD	G File Y/N:
Analyst: Same	_ Test:	233 ;	2 Me	thod:	5000		Solve	nt: <u></u>	G File Y/N:
RFW #	Mtrx	рН	initial Wt/Vol (g/mL)	Surr Mult	Spike Mult	Final Vol (mL)	Split Mult	GPC Y/N	Acid Fraction or Pest/PCB or LC (Date/Time/Initials)
1 9602 L 916 - 021	Air			10		100	عا	N	Start time:
2 1 027				1		í	1		End time:
31 024				\sqcap			H		BN Fraction (Date/Time/Initials)
4: 1, 024	} -			Π		-			Start time:
5 Plant				11				11,	End time:
6 85	1			1	10		1	1	
\x\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	\ <u>\</u>					V			Extraction Information
8 1							1	, =	(Date/Analyst)
9;			<u> </u>						Filtration:
10 1				1				1	Boildown:
11 1	_			1					Blowdown:
12 1	+			1					GPC Ready:
13 1						 	1		GPC Cleanup:
141		-					 		GPC #:
15 1				1			1	-	After GPC Boildown:
16:				1		<u> </u>			After GPC Blowdown:
17 1	+			1				1	Acid/Florisil/Alumina Cleanup:
18 1		-		 			+		<u> </u>
19:		 		1	 		1	1	Prop Sheet 2 48 96
201	49	<u> </u>		 	 		-	-	GPC Lab ID #:
21 1	10	-		1			 	 	Florisil Lot #:
22 1	\forall		<u> </u>	1					Florisil Lab ID #:
23 :	+			 	 		+	1	
24 !	+	<u> </u> 	<u> </u>	 	-	· ·			* For Surr/Spike Mult, refer to Table 1/2/3 (circle one)
		<u> </u>						<u> </u>	1
original sumple	AD+9	ilter to	275	obor 6	<u>e m</u>	inbe	للمتعا	RKU	1. Secol for
0h; 1550 7	3/16	P V					 		
OFF: 0950 Z	MPC	0							
/L LANGE				1 -	- 1 '	14			
итодать: 40 L 910207W	7 1	@ 1XD 4	,				•	// D/	/ 1 Witness:
his Page Reviewed By/Date: _	44	Jec 2/5	File 1	leviews	d Again	et LIMS I	By/DATE	- Whi	W CISTIE
	/ / *								Page #56
FW 21-21-019/Z-11/93									Page #

Analyst. Cg Extraction Batch No: 96LLC014 Extract. Date: 02/07/96

Sheet no.:

	344	EACTACLION BALCIN NO: 96LLC014	96 LLC 0 14	Analyst: CS	Method: ****	
Te	Test: 0833	Cleanup Date:		Analyst:	Client: COE-HOT GAS	T GAS
LIMS Report Date: 02/08/96	ite: 02/08/96	Solvent: ACN	ACN		Adsorbent:	
Sample No:	Client Name Client ID	pH Initial Surr. Spike Final WT/VOL Mult. Mult. VOL	rr. Spike lt. Mult.	Initial Surr. Spike Final Final Split GPC & WT/VOL Mult. Mult. VOL VOL Mult. Y/N Solid	GPC & Y/N Solid	C/D FACTOR
9602L916-	COE-HOT GAS	11				
021 0		7	10.0	100 2.0	2	0 000
022 0	IN/OUT-EXP/SV-SB-FX	. 7	10.0	100 2.0	: Z	200.0
024 0	AFTIN-EXP-R1-FX	7	10.0		: Z	200.0
026 0	AFTIN-EXP-R1MS-FX	7	10.0	100 2.0	Z O	200.0
96LLC014-MB1 0		7	0.01		N 0	200.0
96LLC014-MB1 0S	S	7	10.0 10	100 2.0	N O	200.0

XAD + FILTER SONC 18 HRS W/100mL ACN 40 uL 41020710 1,2-DNB @ 1000 ug/mL Surrogate: Comments:

1.25 mL 461129B Spike:

Reason for Transfer	
Date Time	
Received By	
Date Time	MA Claffe
Relinquished By	
Extracts Transferred	L

LC - GC - GC/MS EXTRACTABLES

R	FW #	Mtrx	ρН	initial Wt/Vol (g/mL)	Surr Mult	Spike Mult	Final Vol (mL)	Split Mult	GPC Y/N	Acid Fraction or Pest/PCB or LC (Date/Time/Initials)
11 960	22916-006	Sao.		370	l		iO	2	2	Start time:
2 !	1 -020	i		210			1			End time:
3 !	-023			240						BN Fraction (Date/Time/Initials
4	-025			220						Start time:
5 960	21963-026			240						End time:
5 <u>:</u>	1 -028			2i0						
7 1	-030			180						Extraction Information
8 i	-032			235						(Dete/Analyst)
91	- 034			325						Filtration:
o : V				200						Boildown:
11 120	slank ank spikin	丁		200		ī			丁	Blowdown:
21	are spra									GPC Ready:
3 1								7		GPC Cleanup:
41		\vdash				1	b			GPC #:
5 :						Tal		1		After GPC Boildown:
6:	•	 			1					After GPC Blowdown:
 	·	 			7					Acid/Florisil/Alumina Cleanup:
18 :		 	10	<i>V</i>				1	1	
9 i		17		f					 	Prep Sheet: 2/9/96 694-
0 1		16	-		 			\vdash		GPC Lab ID #:
 									1	Florisil Lot #:
		\vdash					<u> </u>	+		Florisil Lab ID #:
3,	_/_	 			=				+	# Eng Carry/Coulton Adults reafers to
		-			 		 	\vdash		Table 1/2/3 (circle one)
20 21 22 23 24										Florisil Lat #: Florisil Lab ID #: * For Surr/Splice Mult, re

Logbook #: 5055

SAMPLE EXTRACTION RECORD

Roy F. Weston, Inc. Lionville, Lab.

Extract. Date: 02/08/96

Sample No:

Sheet no.:

Method: *** Analyst: GL Extraction Batch No: 96LLC017

C/D FACTOR Client: COE-HOT GAS GPC \$ Y/N Solids Adsorbent: Split Mult. Initial Surr. Spike Final Final VOL Analyst: Solvent: DCM/ACETONE TO ACN WT/VOL Mult. Mult. VOL Cleanup Date: Нď Client ID LIMS Report Date: 02/09/96 Client Name Test: 0833

9602L916-		COE-HOT GAS									
00	0 900	IN/OUT-EXP/SV-SB-ACE -	7	1	1.0		10	2.0	z	0	20.0
020	020 0	AFTOUT-EXP/SV	,	-	-				: :		0.0
			•	•	•		2	2.0	Z	٠ ٠	70.0
05	023 0	AFTIN-EXP-R1-FB	7	-1	1.0		10	2.0	Z		20.0
02	025 0	AFTIN-EXP-R1MS-FB	7	1	0		0.		; ;		
9602L963.		COE-HOT GAS	ı	ı			2	9	2		70.0
02	026 0	AFTOUT-EXPLSV-R2-FB	7	Н	1.0		10	0.0	7		0 00
02	028 0	AFTOUT-EXPLSV	7	-	-				: :		9 0
	•			ŧ	•		21	0.4	3		70.0
60	030	AFTOUT-EXPLSV-BT-FB	_	-	1.0		10	2.0	z		20.0
03	032 0	AFTIN-EXP-R2-FB	7	1	1.0		10	2.0	2	0	0.00
03	034 0	AFTIN-EXP-R3-FB	7	1	1.0		10		; 2		
OFT LODIT MD	-		ı) -) 1	. 4	4	•	0.0
SOLLCOI / -MBI U	7		7	-	1.0		10	2.0	z		20.0
96LLC017-MB1 0S	11 0	S BLK	7	7	1.0	1.0	10	2.0	z		20.0

ALL REQUIRED FILTRATION THROGH SODIUM SULFATE Surrogate: Comments:

50UL 41024101 1,2-DNB

125UL 461129B Spike:

Reason for Transfer		
Date Time		
Received By		
Date Time		
Relinquished By		
Extracts Transferred Relinqui	V 70	



Other/Miscellaneous



End of Data Package

EXPLOSIVES: COMPLETE SDG FILE (CSF) INVENTORY SHEET

Roy F. Weston, Inc., Analytics Division	
Lionville, PA	
42061.963	
COE-Hot GAS	
09281-012-012-1200	
SW8330 -Explosives By HPLC	
	Lionville, PA 42061963 COE-Hot GAS ODD81-012-012-1200

All documents in the Client's copy of the complete SDG file must be legible, clearly labeled, paginated, single-sided original documents; or of sufficient copy quality to be reproducible to fourth generation copies. (Purge file documents, e.g., original-copy chain-of-custody, etc. assembled per specific contract request only.)

CLIE	NT:	Page N	los	Check (initials/date)		
SDG	No.:	From	То	Lab	Client	
1	Cover Page (Lab Chron)		<u>ک</u> ر	10 -		
2	Table of Contents	3	3	3-3		
3	Case Narrative	4	9			
4	Shipping, Receiving, and Custody Records	10	14	10	_	
	● Lab Chain of Custody/Work Request			<u>भिन्ने अन्त</u>	<u> </u>	
	 Client Custody Reports/Packing Lists 		! !	48		
	Sample Tags, if applicable		 	1		
	Airbills		! !			
5	Explosives Sample Data/QC Summary	15	25	C1 6		
	 Data Summary (LIMS Summary Report) 	İ	i	2200		
	Surrogate %Recovery Summary (Form II)		i	(12)2346		
	MS/MSD Summary (Form III)		Í	WALT	·	
i	BS/BSD Summary (Form III)		i	13/2/196		
	Method Blank Summary (Form IV)		<u> </u>	(12/2076)		
6	Sample Data, for each Sample:	26	Ща	0116		
	• Explosive Results (Form I)		i	41116		
	Chromatograms/Quant Reports, Primary column		i	(2)2/2016		
	Chromatograms/Quant Reports, Confirmation			(V2/20196		
7	column Calibration Standard Data	+	197			
'	Primary Column Standards Data	1113	<u></u>			
	Initial Multi-Range Calibration:	1194	7	0.11		
	Chromatograms/Quant Reports		/	(1)2/2/12	! ! !	
	Daily Calibration:		Y	711		
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	Continuing: Chromatograms/Quant Reports	/	[!	Hane		
	Confirmation Column Standards Data	7	193			
	Initial Multi-Range Calibration:		ļ. — <u> </u>		<u> </u>	
	Chromatograms/Quant Reports		•	//वार्यक्र		
	Daily Calibration:		! !			

CLIE	NT: COE-Hot Gas	Page N	los	Check (initials/	date)
1	No.: 96C2L963	From	То	Lab	Client
	Initial: Chromatograms/Quant Reports			(2) 21/2/46	
	Continuing: Chromatograms/Quant Reports			<u> </u>	
8	Raw QC Data: Blank and Matrix Spike Data	194	<u>शित्र</u>		
	Method Blank Data	155	513	ciable	
	 Explosive Results (Form I) 			122016	i —
	 Chromatograms/Quant Reports, primary column 		İ	41046	
	 Chromatograms/Quant Reports, confirmation column 	.]		<u>~'4C8</u>	
	Blank Spike/Blank Spike Duplicate		j	0/2/2/26	i
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	 Chromatograms/Quant Reports, primary column 		 	Laure	
	Matrix Spike/Matrix Spike Duplicate	MA		na Qù	
	Explosive Results (Form I)	1		10/10/1	
	 Chromatograms/Quant Reports, primary column 	12.3	1	7/2000	
9	Analysis Logbook Pages	<u> </u>	ANA	(X2120196	
10	Standards Preparation Records	<u> </u>	<u> </u>		
	 Surrogate and Target Analyte Spike Solutions 		<u> </u>	(1) 2 W 96	
	Analysis Standards	122 -	 	(112096	
11	Preparation Logs	<u> 255</u>	<u> 250</u>	1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	
	Sample Prep (Extraction) Records	1		(X2/2096	<u> </u>
12	Other/Miscellaneous	IM(c	*12/-		! +
			i +	MA 7-332P	
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COM	MENTS:				
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Chec (Clier	ked by: Signature Print	ed Name	/Title		Date



Cover Page (Lab Chron)

Roy F. Weston, Inc. - Lionville Laboratory 8330 ANALYTICAL DATA PACKAGE FOR COE-HOT GAS

CLIENT ID	RFW #		MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
AFTOUT-EXPLSV-R2COMP	004		AI	96LLC015	02/02/96	02/08/96	02/09/96
AFTOUT-EXPLSV-R3COND	009		AI	96LLC015	02/04/96	02/08/96	02/08/96
AFTOUT-EXPLSV-BTCOND	014		AI	96LLC015	02/04/96	02/08/96	02/09/96
AFTIN-EXP-R2-COND	019		AI	96LLC015	02/02/96	02/08/96	02/08/96
AFTIN-EXP-R2-COND	019	01	AI		02/02/96	02/08/96	02/08/96
AFTIN-EXP-R3-COND	024		AI	96LLC015	02/04/96	02/08/96	02/08/96
AFTIN-EXP-R3-COND	024	01	AI		02/04/96	02/08/96	02/08/96
AFTOUT-EXPLSV-R2-FB	026		AI	96LLC017	02/02/96	02/08/96	02/09/96
AFTOUT-EXPLSV-R2-FX	027		AI	96LLC016	02/02/96	02/08/96	02/09/96
AFTOUT-EXPLSV-R3-FB	028		AI	96LLC017	02/04/96	02/08/96	02/09/96
AFTOUT-EXPLSV-R3-FX	029		AI	96LLC016	02/04/96	02/08/96	02/09/96
AFTOUT-EXPLSV-BT-FB	030		AI	96LLC017	02/04/96	02/08/96	02/08/96
AFTOUT-EXPLSV-BT-FX	031		AI	96LLC016	02/04/96	02/08/96	02/09/96
AFTIN-EXP-R2-FB	032		AI	96LLC017	02/02/96	02/08/96	02/08/96
AFTIN-EXP-R2-FX	033		AI	96LLC016	02/02/96	02/08/96	02/09/96
AFTIN-EXP-R2-FX	033	01	AI		02/02/96	02/08/96	02/09/96
AFTIN-EXP-R3-FB	034		AI	96LLC017	02/04/96	02/08/96	02/09/96
AFTIN-EXP-R3-FX	035		AI	96LLC016	02/04/96	02/08/96	02/09/96
AFTIN-EXP-R3-FX	035	01	AI		02/04/96	02/08/96	02/09/96
AFTIN-EXP-R3-FX	035	02	AI		02/04/96	02/08/96	02/09/96
B QC:							
BLK	MB1		AI	96LLC015	N/A	02/08/96	02/08/96
BLK	MB1 BS		AI	96LLC015	N/A	02/08/96	02/08/96
BLK	MB1		AI	96LLC017	N/A	02/08/96	02/09/96
BLK	MB1 BS		AI	96LLC017	N/A	02/08/96	02/09/96
BLK	MB1		AI	96LLC016	N/A	02/08/96	02/09/96
BLK	MB1 BS			96LLC016	N/A	02/08/96	02/09/96



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EXPLOSIVES

I.	Cover Page (Lab Chron) 00
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XI.	Preparation Logs
XII.	Other/Miscellaneous



Case Narrative



LIONVILLE LABORATORY ANALYTICAL REPORT

Client: COE-HOT GAS

RFW#: 9602L963

W.O :02281-012-012-1200-00

Date Received: 07 February 1996

EXPLOSIVE

1. The set of samples consisted of five (5) air samples which were collected on 02,04 February 1996. Each sampling train consisted of three fractions: condensate, solid (filter / XAD), and solvent; each fraction has been analyzed and reported individually.

- 2. The samples and their associated QC samples were prepared on 08 February 1996 and analyzed by methodology based on EPA method 8330 on 08,09 February 1996.
- 3. The sample ID's for this set of samples were modified (truncated) to accommodate EPA nomenclature, which allows twenty (20) characters on Organic CLP forms.
- 4. All required holding times for extraction and analysis were met.
- 5. All initial calibrations associated with this data set were within acceptance criteria.
- 6. All continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.
- 7. Laboratory control limits were not available for assessing surrogate and spike recoveries for the procedures used to prepare these samples.
- 8. Laboratory control limits were not available for air matrices. However, samples AFTOUT-EXPLSV-R3COND and AFTOUT-EXPLSV-BTCOND exhibited surrogate recoveries outside the laboratory control limits for water samples, which are applicable in this case. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
- 9. Tetryl was not recovered from the blank spike (96LLC017-MB1 BS) associated with the solvent matrix.
- 10. The Tetryl recovery from blank spike (96LLC016-MB1 BS) associated with solid matrix was relatively low.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 241 pages.



- All samples associated with 'AFTIN' (afterburner inlet) required dilution due to the 11. presence of high levels of target analytes.
- The following solvent samples required two-fold dilutions due to immiscibility with 12. acetonitrile:
 - 1. AFTOUT-EXPLSV-R2-FB
 - 2. AFTOUT-EXPLSV-R3-FB
 - 3. 96LLC017-MB1
 - 4. 96LLC017-MB1 BS

for J. Michael Taylor

Vice President and Laboratory Manager

Lionville Analytical Laboratory

cs/jkd/misc/02-963.ex

2-2346

Date

WESTERN.

GLOSSARY OF EXPLOSIVE DATA

DATA QUALIFIERS

- U = Indicates that the compound was analyzed for but not detected.

 The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

WESTON® Sample Discrepancy Report (SDR)	SDR #: 9M 0098
Initiator: K.Baker RFW Batch: 9602L916, 963 Date: 2-19-96 Samples: ALL Client: AARP HotGAS Method: SW846/MCAWW/CLP	Parameter: #L Matrix: #/K Prep Batch:
1. Reason for SDR a. COC Discrepancy Tech Profile Error Client Request Sa Transcription Error Wrong Test Code Ot Ot Description Error Wrong Test Code Ot Ot Description Error Wrong Test Code Ot Ot Description Error Wrong Test Code Ot Ot Description Error Wrong Test Code Ot Ot Description Error Wrong Test Code Ot Description Error Wrong Test Code Ot Description Error Wrong Test Code Ot Description Error Wrong Test Code Ot Description Error Wrong Test Code Ot Description Error Wrong Test Code Ot Description Error Wrong Test Code Ot Description Error Wrong Test Code Ot Description Error Wrong Test Code Ot Description Error Wrong Test Code Ot Description Error Wrong Test Code Ot Description Error Wrong Test Code Ot Description Error Wrong Test Code Ot Description Error Wrong Test Code Ot Description Error Wrong Test Code Ot Description Error Wrong Test Code Ot Description Error Wrong Test Code Ot Description Error Wrong Test Code Description Error Wrong Test Code Description Error Wrong Test Code Description Error Wrong Test Code Description Error Wrong Test Code Description Error Wrong Test Code Description Error Wrong Test Code Description Error Description Error Wrong Test Code Description Error Descr	mple Pulled Label ID's Illegible on Wrong Received Past Hold
3. Discussion and Proposed Action — Re-log — Entire Batch — Following Samples: — Re-leach — Re-extract — Re-digest — Revise EDD — Change Test Code to — Place On/Take Off Hold (circle) Other Description: X change Tescription:	uhere appropriate
4. Project Manager Instructionssignature/date:	ition:
When Final Action has been recorded, forward original to QA Specialist for	
X Initiator Metals Metals Inorgal	: Brewer/Keehn/Edgington

WESTON® Sample Discrepancy Report (SDR) SDR #:
Initiator: C.Schnell Date: 21/2196 Client: CE-Hot Gas RFW Batch: 96021963 Parameter: Air (H20) 8330 Matrix: Hir (H20) Method: SW845/MCAWW/CLP/ Prep Batch: Prep Batch:
1. Reason for SDR a. COC Discrepancy Tech Profile Error Client Request Sampler Error on C-O-C Transcription Error Wrong Test Code Other b. General Discrepancy Missing Sample/Extract Container Broken Wrong Sample Pulled Label ID's Illegible Hold Time Exceeded Insufficient Sample Preservation Wrong Received Past Hold Improper Bottle Type Not Amenable to Analysis Note: Verified by [Log-In] or [Prep Group] (circle)signature/date: c. QC Problem (Include all relevant specific results; attach data if necessary) Ow Surrogate Received Past Hold
2. Known or Probable Causes(s) 963-009 - unknown 963-014- large volume of ACN present after (st 1800 step, which may be an indication something may have been present in the sample which interfered with ACN/salt water equilibrium.
3. Discussion and Proposed Action Re-log Entire Batch Following Samples: Re-leach Re-extract Re-digest Revise EDD Change Test Code to Place On/Take Off Hold (circle) Other Description: GL3-D09: despite (ow recovery; reporting limits are much below action (evels for the first). GL3-D09: despite (ow recovery; reporting limits are much below action (evels for the first). GL3-D09: despite (ow recovery; reporting limits are much below action (evels for the first). GL3-D09: despite (ow recovery; reporting limits are much below action (evels for the first). GL3-D09: despite (ow recovery; reporting limits are much below action (evels for the first). GL3-D09: despite (ow recovery; reporting limits are much below action (evels for the first). GL3-D09: despite (ow recovery; reporting limits are much below action (evels for the first). GL3-D09: despite (ow recovery; reporting limits are much below action (evels for the first).
4. Project Manager Instructionssignature/date: Concur with Proposed Action Disagree with Proposed Action; See Instruction Include in Case Narrative Client Contacted: Date/Person Add Cancel
5. Final Actionsignature/date:
Route Distribution of Completed SDR X Initiator X Lab Manager: J. Michael Taylor X Project Mgr: Kally July Section Mgr: Siery/Dufke/Daniels X Section Mgr: Dianne Therry X QA Section Mgr: Dianne Therry X QA File: Feldman/Racioppi/Shaffer X Data Reporting: Som Basuthakur Sample Prep: Osei-Mensah/Swisher Distribution of Completed SDR Metals: Reichner/Doughty Inorganic: Perrone/Leonards GC/LC: Jarvis/Skrzat/Schnell MS: LeMin/McIntyre/Taylor/Kasdras/Steele Log-in: Geiger EDD: Miller Admin: Brewer/Keehn/Edgington Other:



Shipping, Receiving, and Custody Record

381-596a Sample Y or N Y Or (N Package Y or N COC Record Present Package Y or (N Upon Sample, Rec't 1) Present on Outer 2) Unbroken on Qui 3) Present on Sagn 4) Unbroken on 4 COC Tape was: **WESTON Analytics Use Only** ** य $\boldsymbol{\sigma}$ Page 7 Jit Sito <u>0</u> 2(Amblent ochilled 3) Received in Good 5) Receive... Holding Times Properly Presewed 5) Received Within Samples were 1) Shipped X or 4) Labels Indicate 12 Hand Delivered **/** Cooler# **WESTON Analytics Use Only** Arbit II Condition CN M INORG isteM Catell Density Custody Transfer Record/Lab Work Request cholor my return occurs Discrepancies Between Samples Labels and COC Record? Y for N NOTES: a Karan からのかけてれたいと ととろと WE WOOD 8330 Reading とい L378 510x 4/13 15,25 CiaH PCB Pest/ ORGANIC E E ANS 3 CKARA 2 YO, Liquid Liquid Date Time / Collected Collected 94 1375 Received by 7 #/Type Container DATE/REVISIONS: Refrigerator # ANALYSES REQUESTED Preservatives cof-lib-parat-existical-conorphi Volume COE-H6-MANA-CAMA-A-A-AUNA Metrix 26-126-1919-07-12/1/2/123-XAN -L373 Relinquished by Matrix Chosen Chosen MS MSD 086 007/ 1 10 CDE-ING-PROCET-EXP DUT L372 06-146 APPD-1 - 15XXVV-C-16-18 MOTEMS. C-16-MAPON-ENDIV-· JAXX + Hts 17/ DE-146-PAPTON-PAPTUR E-HE-MATOUT -EMICO. -116 MPT OF EXPLY-15:40 Time FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS Client ID/Description Determore Work Order # D2281-0/2-0 3/1/% 0W/0 KATEDARR Oate Oate Client (06-407 6 45 Received by WESTON Analytics Use Only Project Contact/Phone # Date Rec'd 2 74 AD Project Managen of 30 Special instructions RFW 21-21-001/A-7/91 CUS 30 Liquide EP/TCLP Leachate Relinquished Account # 96. Sodim 90. Sodid 81. Sludge W. Water 0. Oil A. Air DL - Drum MATRIX CODES: ₹Ÿ. ÷

ron reusions Seeport

EHIASO19 381-596 COC Tape was:

1) Present on Outer
Package Y or N z OC Record Present Joon Sample Rec't 5 **WESTON Analytics Use Only** Page 🛫 1) Shipped or Hand Delivered 3) Received n go Condition Properly Preserved ŏ ≻ いない 5) Received Wi Holding Times Cooler# **WESTON Analytics Use Only** 2) Ample レストレーション ータF7 しんしょ Custody Transfer Record/Lab Work Request क्रिकार Discrepancies Between Samples Labels and COC Record? Y or N NOTES: Ubi THEA L378 ANOTHER X GGPMUS S 133 H Herb Pest/ ORGANIC Time ANB Ann 1770 The are mother's on all samples are that wise Canalled BASORIE Date AOV Liquid Solid Liquid Date Time Collected Collected Received by #/Type Container DATE/REVISIONS: ANALYSES REQUESTED Refrigerator # Preservatives Volume Matrix Relinquished by Matrix QC Chosen MS MSD 2,4-DWT; 2,6-DWT; * RDX; HMX; tetry/; COCHO ARTOM - EMISS-Ē 15.10 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS ETH-MAI DAT-EN Cilent 1D/Description Est. Final Proj. Sampling Date
Work Order # 102231-012-1 de-145 maron Project Contact/Phone Date Due 1,3-DNB. TAT 7,4.6- TNUT Received 105-107 **WESTON Analytics Use Only** Special instructions: RFW 21-21-001/A-7/91 Relinquished 8 - Soil 8E - Sediment 8D - Soild 8L - Sludge W - Vater O - Oll A - Ar D8 - Drum Date Rec'd Account # MATRIX CODES: 占 ₽×F ÷

381-596a Int on Sample 2) Unbroken on Outer ecord Present N 10 Y (MB) X OF N Z ō Present on Outer Joon Sample Rec't 3 3 Package Y or COC Tape was: **WESTON Analytics Use Only** Page. unblow of Chilled 5) Received Within 5 ŏ dand Delivered Samples were: Holding Times rly Presa Cooler# **WESTON Analytics Use Only** 1) Shipped - Hou INORG CN Metal LANCE COSTON Explanation DET INCE'T COSTON Transfer Record/Lab Work Request 5250 AG z Discrepancies Between SO-X-W AN PORT WATER Samples Labels and COC Record? Y or I NOTES: 3330* Ref# 3 えると 3 TWON X 4 Kook L378 40 11 11 11 12 1 Herb Pest/ ORGANIC Sami whiles 10 PM CANO 3 Time 2 Era Bois -L377 くつ AOV 2 O ete Solid Collected DATE/REVISIONS: 2 Suse L375 Received Date Collected #/Type Container Š ANALYSES REQUESTED Reirigerator # 13-COND(N-Preservatives Volume Matrix L373 Relinquished by 3-DNB; 1,3,5-TWB. Matrix QC Chosen (<) <u>out | -</u> Jac Lx COE WE METEN - EXP L372 doe-146-PAPTIW-EN 16-146-PMTTM-15XP-CIR-H6-AMIN-EN OF-ING AMERIA - EAP-CAE +16 -AFT TAM- EN-DE- LIG- PAPTEN-EXA K-HG-METW-EX CLE HO - PATTW- ENA DE-THO-PAPTEN-EW A ROX; HMX; tety/5 1540 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS Time Client ID/Description Est. Final Proj. Sampling Date
Work Order # 02281-012 76021963 Baker 3/7/6 Date TAT Date Due **6 A** Webselm Received by Project Contact/Phone #____ WESTON Analytics Use Only Client COE-HO 2,4,6-TWT AD Project Manager — 9₽ Special Instructions: RFW 21-21-001/A-7/91 त्र B R Relinquished Date Rec'd Account # PL - Drum MATRIX CODES: 5 . Ext ¿ġ j

Page Cof										1	7	1+005	24000	0/0+0	3 4 DOX	1+1015	8+013	000 4 9	8/0/21	3/ + 025	20 4 CB B	WESTON Analytics Use Only	COC Tape was:	1) Present on Outer	2) Unbroken on Outer		3) Present on Sample		Sample V or N	GOC Record Present		381-596a
						INORG		СИ	s Use Only			ď	8	00	<u>ප</u>	/Q	/U	<u>ે</u>	0	96	103	WESTON Ana	Samoles were:		Airbily	2) Ambient or Chilled	3) Received in God	4) Labors Indicate	Property Preserved	5) Received Within	Holding Fimes Y or N	Cooler#
castody italiste necola/Eab not a request								heH teM	WESTON Analytics Use Only	LE ST	2	\ \ \					+	7			エ	ISIONS:		0,0,0	Staning Skyad J					Betwee Is and	COC Record? Y or N NOTES:	1.378 Ref#
/ Lab 40				1		OBGANIC	Division N	BON BON		45&9	0	>					†	/		1/6	٨	בטיוכל פועם	(044		11 atten = 1+1					Date Time		1.977
		#/Type Container	T		Dio		SES	STED		Date Time Collected Collected		2/2/46	1	2/4/26	- - - -	3 34 96	7.7	althe	7	21,196	[工]	VISIONS:	O O	2	HIII	4	5.	9		Received D		2001
	Refrigerator #	#/Type		/olume	Organization		ANALYSES	REQUE		Matrix QC Chosen Matrix (<)	MS MSD	78 hr) , X	3) 	FA BLE	٠ ا	2		9	1	DATE/REVISIONS:	<u>र</u> ४		3/14/16					Relinquished by		000
casical	-6H3	4		スナー	TAKE TO SERVICE THE PROPERTY OF THE PROPERTY O		M) ond		Cilent ID/Description		APTOUT- EXPISV-R2-	AFTOUT-EXP15/1-R2-A	AFTDUT-EXPSY-R3-F	AFTOUT-FYPISU-23-	Fre SV-SE	1	EXP-RO-F	AFTIN-FXP-P3-FX	xP-83-FE	XP-R3-FX	SHADED AREAS		(JAPOSAR	0	Troine to				Date Time	क्षा निर्म	1626
160	0 た-140十ち	Sempling Date		70	a buouda		VAL A TAT	Date Due	_	Leb Clent		26 APTOUT-		38 APTOURE		30 APTAINT-FYP	PPTAUT	A PFIN-	⊢ —	374FIN-8xP-83-	35 AFTIN-EXP-R3-FX	FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS		TO = FISABITS (JAPOST	CAN CAN TIME TO THE	メッコロ				Received	1200	
4100315	Cllent	Est. Final Prof. Sa	Work Order		_	AD Project Maney	20	Date Rec'd		MATRIX CODES: 8 - Soil 8E - Sediment	SO - Solid	Water	5₹	DS - Drum Solids	_	L. EP/TCLP	W-Wipe	F - F	14	ייין	[(1)]	FIELD PERSONNE	Special instructions:	FB=F		1				Relinquished by	Fracti	



Explosive Sample QC/Data Summary

Roy F. Weston, Inc. - Lionville Laboratory

Explosives by HPLC / Method 8330 Client: COE-HOT GAS

RFW Batch Number: 9602L963

Report Date: 02/15/96 20:23 :====f AFTIN-EXP-R3 AFTOUT-EXPLS 1.00 total ug V-BT-FB total ug 024 AIR 1.0 220 330 170 0009 50 AIR 0.50 0.52 1.5 0.50 0.50 0.52 52 54 -COND Ω Work Order: 02281-012-012-1200-00 APTOUT-EXPLS Þ D Þ AFTIN-BXP-R2 total ug V-R3-FX 1.00 total ug 10000 019 DL AIR · AIR 5.2 10000 5200 5200 5000 5000 5.0 5.2 5.0 22000 5000 15000 7000 22 10 15 -COND 89 ase===f] AFTIN-EXP-R2 AFTOUT-EXPLS 2.00 100 V-R3-FB total ug total ug 019 AIR AIR 220 2000 480 190 7200 52 50 72 AFTOUT-EXPLS AFTOUT-EXPLS V-BICOND 1.00 1.00 total ug V-R2-FX total ug 014 AIR AIR 0.50 0.50 5.0 0.50 1.5 5.2 5.2 0.52 0.52 5.0 0 70 AFTOUT-EXPLS AFTOUT-EXPLS Þ Þ Þ Þ V-R3COND 1.00 2.00 V-R2-FB total ug total ug 600 AIR AIR 0.50 0.50 0.50 2.0 1.0 1.0 1.0 2.9 1.0 0.52 0.52 1.5 0.50 36 Cust ID: AFTOUT-EXPLS D D D Cust ID: AFTIN-EXP-R3 V-R2COMP 1.00 5000 total ug total ug 004 024 DL AIR AIR 5000 2500 2600 1.5 0.50 0.50 2600 7300 2500 1.0 0.50 0.52 0.52 0.50 11000 6300 2500 -00<u>00</u> Ω RFW#: 1,2-Dinitrobenzene RFW#: D.F.: Units: 1,2-Dinitrobenzene D.F.: Units: Matrix: Matrix: 2,4,6-Trinitrotoluene 2, 4, 6-Trinitrotoluene 1,3,5-Trinitrobenzene 1, 3, 5-Trinitrobenzene 2,4-Dinitrotoluene 2,6-Dinitrotoluene 2,4-Dinitrotoluene 1,3-Dinitrobenzene 2,6-Dinitrotoluene 1,3-Dinitrobenzene Nitrobenzene Nitrobenzene Information Information Surrogate: Surrogate: Sample Tetryl Sample Tetryl HMX HE RDX 8

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked. ** Outside of Advisory limits. I= Interference. NA= Not Applicable. %= Percent recovery. D= Diluted out. Roy F. Weston, Inc. - Lionville Laboratory

Work Order: 02281-012-012-1200-00 Explosives by HPLC / Method 8330 Client: COE-HOT GAS

RFW Batch Number: 9602L963

96LLC017-MB1 AFTIN-EXP-R3 total ug 2.00 1.00 total ug 035 5.0 5.0 AIR 470 250 5.2 AIR 2500 23 BLK BB 22 05 18 29 23 21 AFTIN-EXP-R3 96LLC017-MB1 ==£] D 100 total ug total ug 034 2.9 1.0 1.0 1.0 1.0 1.0 AIR 150 960 20 220 230 23 BLK 96LLC015-MB1 AFTIN-EXP-R2 AFTIN-EXP-R2 total ug 100 total ug 033 DL 500 500 AIR 500 520 520 1500 AIR 2200 1000 2500 BLK BS 62 94 96LLC015-MB1 ...seesef1 Þ Þ total ug 1.00 1.00 total ug 033 0.50 0.50 1.0 0.52 0.52 1.5 0.50 120 2300 AIR 9 4.6 21 77 BLK A AFTIN-EXP-R2 AFTIN-EXP-R3 total ug 100 total ug 035 DL 032 2700 500 500 AIR 500 520 520 1500 2200 1000 AIR 150 920 50 760 39 Cust ID: AFTOUT-EXPLS Cust ID: AFTIN-EXP-R3 total ug 1.00 V-BT-FX total ug 035 DL 031 AIR 5.0 AIR 220 610 290 150 50 10 5.0 5.0 52 52 5.2 2800 5.2 15 75 1,2-Dinitrobenzene D.F.: RFW#: Units: 1,2-Dinitrobenzene Matrix: D.F.: RFW#: Matrix: Units: 2,4,6-Trinitrotoluene 1, 3, 5-Trinitrobenzene 1, 3, 5-Trinitrobenzene 2, 4, 6-Trinitrotoluene 2,6-Dinitrotoluene 2,4-Dinitrotoluene 2,6-Dinitrotoluene 1,3-Dinitrobenzene 2,4-Dinitrotoluene 1,3-Dinitrobenzene Nitrobenzene Nitrobenzene Information Information Surrogate: Surrogate: Sample Sample Tetryl Tetryl HMX HMX RDX RDX

NS= Not spiked *= Outside of Advisory limits. U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. I= Interference. NA= Not Applicable. %= Percent recovery. D= Diluted out. Roy F. Weston, Inc. - Lionville Laboratory

Explosives by HPLC / Method 8330

Work Order: 02281-012-012-1200-00

Page:

Report Date: 02/15/96 20:23

Client: COE-HOT GAS RFW Batch Number: 9602L963

96LLC016-MB1 1.00 total ug BLK BS AIR 78 70 58 82 85 19 78 87 RFW#: 96LLC016-MB1 1.00 total ug AIR 5.0 15 5.0 5.0 5.0 10 5.2 5.2 22 BLK D.F.: Matrix: Units: 1,2-Dinitrobenzene Cust ID: 1, 3, 5-Trinitrobenzene Tetryl 2,4,6-Trinitrotoluene 1,3-Dinitrobenzene 2,6-Dinitrotoluene_ 2,4-Dinitrotoluene Nitrobenzene_ Information Surrogate: Sample HMX RDX

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked. *= Outside of Advisory limits. I= Interference. NA= Not Applicable. %= Percent recovery. D= Diluted out. 2F SOIL ORGANICS SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: <u>2281-12-12</u>

Case No.: COE-HOT GAS

RFW Lot No.: 9602L963

GC Column(1): OD5/DA ID: OD5/(mm)

GC Column(2): ID: ____(mm)

	SAMPLE NO.	LADRO			_	,				!				TOT
	•	FREC	#	*REC	#	*REC	#	*REC	#	*REC	#	*REC	#	OUT
		*===:	==:		===		===		: : :		===	====	===	===
. – i	AFTOUT-EXPLSV-R2COMP	75					1							0
J2	AFTOUT-EXPLSV-R3COND	36		[0
) 3	AFTOUT-EXPLSV-BTCOND	0	*											1
)4	AFTIN-EXP-R2-COND	D		1				ļ						0
) 5 İ	AFTIN-EXP-R2-COND	D												0
)6 i	AFTIN-EXP-R3-COND	D		1						<u> </u>				0
	AFTIN-EXP-R3-COND	D												0
	AFTOUT-EXPLSV-R2-FB	56		1										0
	AFTOUT-EXPLSV-R2-FX	70		1										0
,	AFTOUT-EXPLSV-R3-FB	72		1						1				0
	AFTOUT-EXPLSV-R3-FX	68		1				1		l				0
,	AFTOUT-EXPLSV-BT-FB	68		ĺ						1				0
	AFTOUT-EXPLSV-BT-FX	75		1				1		1				0
	AFTIN-EXP-R2-FB	D		i		1				ļ				0
L5	AFTIN-EXP-R2-FX	126				i		ļ		ļ				0
16 j	AFTIN-EXP-R2-FX	D		1		1		1		!				0
L7	AFTIN-EXP-R3-FB	D		1		İ				!		!		0
18	AFTIN-EXP-R3-FX	I								ļ		!		0
L9	AFTIN-EXP-R3-FX	j D				1				!				0
20 ∫	AFTIN-EXP-R3-FX	Q		1]		!		!		<u> </u>		0
21	BLK	71		İ				!		ļ		ļ		0
22 Ì	BLKBS	73				1		ļ		!		ļ		0
23	BLK	45		j		l				<u>į</u>		ļ		0
24	BLKBS	26				l		!		ļ		!		0
25	BLK	80				1		ļ		ļ.		ļ		0
26	BLKBS	78				1		!		ļ		!] 0

ADVISORY QC LIMITS (1-999)

= 1,2-Dinitrobenzene

- # Column to be used to flag recovery values
- * Values outside of QC limits
- D Surrogate diluted out

Control Limits Are Not AT AVAILABLE

FORM II ORG-2

V4.1

3F AIR ORGANICS BLANK SPIKE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Client : COE-HOT GAS

RFW Lot No.: 96LLC015-MB1

BLANK Spike - Sample No.: BLK

	SPIKE	SAMPLE	MU 3/15/94 BS 1	BS	QC
•	ADDED	CONCENTRATION	CONCENTRATION	ક	LIMITS
COMPOUND	tot. g	(tot. 75	(tot rg	REC #	REC.
HMX	22.0	0	15 .	68	1-999
RDX	10.0	0	6.2	62	1-999
1,3,5-Trinitrobenzene	2.50	0	2.0	79	1-999
1,3-Dinitrobenzene	2.50	0	1.8	73	1-999
Nitrobenzene	2.60	0	2.0	77	1-999
Tetryl	6.50	0	6.1	94	1-999
2,4,6-Trinitrotoluene	2.50	0	2.1	85	1-999
2,6-Dinitrotoluene	2.60	0	2.1	80	1-999
2,4-Dinitrotoluene	2.50	0	2.0	79	1-999

[#] Column to be used to flag recovery value with an asterisk

Spike Recovery: 0 out of 9 outside limits

COMMENTS: Control Limits are not available

^{*} Values outside of QC limits

3F AIR ORGANICS BLANK SPIKE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Client : COE-HOT GAS

RFW Lot No.: 96LLC017-MB1

BLANK Spike - Sample No.: BLK

		8KU 2/15/94		
SPIKE	SAMPLE	BS	BS	QC
ADDED	CONCENTRATION	CONCENTRATION	*	LIMITS
(tot. pg	(tot. pg	(tot. ag	REC #	REC.
22 0	. 0 . / 0	. ' 0 .	10	 1-999
	•	!		
	U	!		1-999
2.50	0	0.52	. 21	1-999
2.50	0	0.68	27	1-999
2.60	0	0.94	36	1-999
6.50	0	0	Ø *	1-999
2.50	0	0.32	13	1-999
2.60	0	0.60	23	1-999
2.50	0	0.52	21	1-999
	22.0 10.0 2.50 2.60 6.50 2.60	ADDED CONCENTRATION (tot. pg (tot. pg 10.0 0 0 0 0 0 0 0 0 0	ADDED CONCENTRATION CONCENTRATION (tot. pg (tot. pg 1.0	ADDED CONCENTRATION CONCEN

[#] Column to be used to flag recovery value with an asterisk

Spike Recovery: 1 out of 9 outside limits

COMMENTS: Control Limits are not available

^{*} Values outside of QC limits

AIR ORGANICS BLANK SPIKE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: <u>2281-12-12</u>

Client : COE-HOT GAS

RFW Lot No.: 96LLC016-MB1

BLANK Spike - Sample No.: BLK

			2115/14		
	SPIKE	SAMPLE	BS	BS	QC
	ADDED	CONCENTRATION	CONCENTRATION	*	LIMITS
COMPOUND	(tot. ng	(tot. ag	(tot. ng)	REC #	REC.
HMX	220	6 6	170	75	1-999
RDX	100	0	70	70	1-999
1,3,5-Trinitrobenzene	25.0	0	15	58	1-999
1,3-Dinitrobenzene	25.0	0	20	82	1-999
Nitrobenzene	26.0	0	22	85	1-999
Tetryl	65.0	0	12	19	1-999
2,4,6-Trinitrotoluene	25.0	0	19	78	1-999
2,6-Dinitrotoluene	26.0	0	23	87	1-999
2,4-Dinitrotoluene	25.0	0	22	87	1-999

[#] Column to be used to flag recovery value with an asterisk

Spike Recovery: 0 out of 9 outside limits

COMMENTS: Control Limits are not available

^{*} Values outside of QC limits

4C

ORGANICS METHOD BLANK SUMMARY

CLIENT	SAMPLE	NO.	

BLK	•	(

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

o i

Client: COE-HOT GAS

Lab Sample ID: 96LLC015-MB1

Lab File ID: 02089646.19

Date Analyzed (2):

Extraction: (SepF/Cont/Sonc) SONC

Matrix:(soil/water) AIR
Sulfur Cleanup: (Y/N) _

Date Extracted: 02/08/96

•

Date Analyzed (1): 02/08/96

Time Analyzed (2): ____

Time Analyzed (1): 1658

Instrument ID (1): 46

Instrument ID (2):

GC Column (1): OD5/DA ID: OD5/(mm)

GC Column (2): ID: ____(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT	LAB	DATE	DATE
	SAMPLE NO.	SAMPLE ID	ANALYZED 1	ANALYZED 2
	=========	=========	=======	========
01	AFTOUT-EXPLS	9602L963-004	02/09/96	'
02	AFTOUT-EXPLS	9602L963-009	02/08/96	
03	AFTOUT-EXPLS	9602L963-014	02/09/96	
04	AFTIN-EXP-R2	9602L963-019	02/08/96	
05	AFTIN-EXP-R2	9602L963-019	02/08/96	
06	AFTIN-EXP-R3	9602L963-024	02/08/96	İ
07	AFTIN-EXP-R3	9602L963-024	02/08/96	
80	BLKBS	96LLC015-MB1S	02/08/96	

COMMENTS:	
	•

4C ORGANICS METHOD BLANK SUMMARY

CLIENT	SAMPLE	NO.
1		
BLK		

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Client: COE-HOT GAS

Lab Sample ID: 96LLC017-MB1

Matrix: (soil/water) AIR

Sulfur Cleanup: (Y/N) _

Date Analyzed (1): 02/09/96

Time Analyzed (1): 1351

Instrument ID (1): 46

GC Column (1): OD5/DA ID: OD5/(mm) GC Column (2): ID: ____(mm)

Lab File ID: 02099646.16

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 02/08/96

Date Analyzed (2):

Time Analyzed (2): ____

Instrument ID (2):

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT	LAB	DATE	DATE
	SAMPLE NO.	SAMPLE ID	ANALYZED 1	ANALYZED 2
				========
01	AFTOUT-EXPLS	9602L963-026	02/09/96	
02	AFTOUT-EXPLS	9602L963-028	02/09/96	İ
03	AFTOUT-EXPLS	9602L963-030	02/08/96	İ
04	AFTIN-EXP-R2	9602L963-032	02/08/96	İ
05	AFTIN-EXP-R3	9602L963-034	02/09/96	
06	BLKBS	96LLC017-MB1S	02/09/96	İ
				ì

COMMENTS:		 	

4C ORGANICS METHOD BLANK SUMMARY

Contract: 2281-12-12

CLIENT	SAMPLE	NO.	
BLK			

Lab Name: Roy F. Weston, Inc.

Client: COE-HOT GAS

Lab Sample ID: 96LLC016-MB1 Lab File ID: 02099646.17

Matrix: (soil/water) AIR Extraction: (SepF/Cont/Sonc) SONC

Sulfur Cleanup: (Y/N) _ Date Extracted: 02/08/96

Date Analyzed (1): 02/09/96 Date Analyzed (2): _____

Time Analyzed (1): 1410 Time Analyzed (2): ____

Instrument ID (1): 46 Instrument ID (2):

GC Column (1): OD5/DA ID: OD5/(mm) GC Column (2): ID: ____(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

CLIENT	LAB	DATE	DATE
SAMPLE NO.	SAMPLE ID	ANALYZED 1	ANALYZED 2
=========	==========		========
AFTOUT-EXPLS	9602L963-027	02/09/96	
AFTOUT-EXPLS	9602L963-029	02/09/96	
AFTOUT-EXPLS	9602L963-031	02/09/96	.
AFTIN-EXP-R2	9602L963-033	02/09/96	
AFTIN-EXP-R2	9602L963-033	02/09/96	
AFTIN-EXP-R3	9602L963-035	02/09/96	
AFTIN-EXP-R3	9602L963-035	02/09/96	
AFTIN-EXP-R3	9602L963-035	02/09/96	
BLKBS	96LLC016-MB1S	02/09/96	
i	_	İ	
	SAMPLE NO. ======== AFTOUT-EXPLS AFTOUT-EXPLS AFTIN-EXP-R2 AFTIN-EXP-R3 AFTIN-EXP-R3 AFTIN-EXP-R3	SAMPLE NO. SAMPLE ID ===================================	SAMPLE NO. SAMPLE ID ANALYZED 1 ===================================

COMMENTS:

3/90



Analysis Run Logs

HPLC ANALYSIS LOG

VI3

ANALYST: MOBILE PHASE: 541. 4,0, 32.71. Me6H,

ODS SEMX 4.6mm COLUMN SERIAL #: 21856 @ 38°c COLUMN TYPE: 13.2%. ACM

FLOW RATE: __

SPIKING STANDARD

CALIBRATION STANDARD 461118

DSYnm

WAVELENGTH:

DETECTOR: HP 1650 DAD

INSTRUMENT #: #PLC # (

OMMENTS 06330 Primmay 46124 STD 461118B STD 461118A STD 461118D STD 461118C STD 461118F STD 461118E 101/24/p6 18/22:48 delox 1/21/96 01/24/96 18:02:00 01/24/96 16:23:23 01/24/96 17:42:17 01/24/96 16:43:07 01/24/96 17:02:54 01/24/96 17:22:36 RAW2: A0667560 " RAW2: A0667569 RAW2: A0667557 RAW2: A0667572 RAW2: A0667551 RAW2: A0667577 RAW2: A0667554 01249646.01 01249646.02 01249646.03 01249646.04 01249646.05 01249646.06 01249646.07 01 02 03 04 05 06

RFW 21-21-022/B-01/92

REVIEWED BY/DATE PAGE #

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INSTRUMENT #:

HPLC ANALYSIS LOG

MOBILE PHASE:

FLOW RATE: ANALYST:

COLUMN SERIAL #:

COLUMN TYPE:

TIME

DATE

ANALYSIS

02089646.25

02089646.26 02089646.27 02089646.28

> 27 28 29 30 31 32 33

02089646.29

02089646.30

02089646.31 02089646.32

CALIBRATION STANDARD

WAVELENGTH: DETECTOR:

COMMENTS LOT ID # 9602L916-013D1 500 9602L963-034 5000 9602L963-032D1 100 9602L963-034D1 loo 9602L916-023 2cv00 9602L963-024 5000 9602L963-032 Çuco 9602L963-019D1 (00 9602L963-024D1 (00 9602L916-024D1 100 9602L916-018D1 9602L916-020 9602L963-030 INST. BLANK STD 461118D INST. BLANK STD 461118D CLAS ID # STD 461118D INST. BLANK IBLK 00:49:20 00:29:45 02/09/96 01:09:01 02/08/96 18:56:15 02/08/96 20:14:46 21:52:48 22:32:02 22:51:38 02/08/96 23:11:14 23:30:49 23:50:26 02/09/96 00:10:07 02/08/96 19:15:53 02/08/96 19:35:30 02/08/96 19:55:11 20:34:22 21:13:37 02/08/96 22:12:24 20:54:01 21:33:12 SPIKING STANDARD RFW SAMPLE NUMBER 02/08/96 02/08/96 02/09/96 02/08/96 96/80/20 02/08/96 02/08/96 02/08/96 02/08/96 02/08/96 02/09/96 <u>:</u> 02 RAW2:B9673190 RAW2: B8673155 RAW2: B8673169 RAW2: B9673178 RAW2: B9673195 TRAY RAW2: B8673074 RAW2: B8673078 RAW2: B8673091 RAW2: B8673099 RAW2: B8673105 RAW2: B8673114 RAW2: B8673119 RAW2: B8673131 RAW2: B8673138 RAW2: B8673145 RAW2:B8673152 RAW2: B8673166 RAW2: B9673183 RAW2: B8673083 RAW2: B8673124 돌호

02089646.35

02089646.33 02089646.34 02089646.36

36

02089646.37

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02089646.40 02089646.41 02089646.42 02089646.43 02089646.44

02089646.39

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RFW 21-21-022/B-01/92

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INSTRUMENT #:

HPLC ANALYSIS, LOG

MOBILE PHASE:

ANALYST: __

SPIKING STANDARD _ CALIBRATION STANDARD WAVELENGTH: _ DETECTOR: __

COLUMN TYPE:

COLUMN SERIAL #: _ FLOW RATE: _

5. Linual 2/12/86	٦	REVIEWED BY/DATE			HFW 21-21-022/B-01/92	RFW 21-2
		9602L963-019 (OCL)	02/08/96 18:36:39	RAW2:B8673067	02089646.24	24
		9602L963-014	02/08/96 18:17:03	RAW2: B8673063	02089646.23	23
	رازه(تم	9602L963-009	02/08/96 17:57:28	RAW2:B8673053	02089646.22	22
	えずし	9602L963-004	02/08/96 17:37:50	RAW2: B8673045	02089646.21	21
		96LLC015-MB1S	02/08/96 17:18:11	RAW2: B8673040	02089646.20	20
		96LLC015-MB1	02/08/96 16:58:34	RAW2: B8673031	02089646.19	19
		9602L916-026	02/08/96 16:38:57	RAW2: B8673026	02089646.18	18
		9602L916-024	02/08/96 16:19:21	RAW2: B8673023	02089646.17	17
		STD 461118D	02/08/96 15:59:43	RAW2:B8673016	02089646.16	16
		IBLK	02/08/96 15:40:02	RAW2: B8673003	02089646.15	15
		9602L916-022	02/08/96 15:20:24	RAW2: B8672994	02089646.14	14
		9602L916-021	02/08/96 15:00:46	RAW2: B8672989	02089646.13	13
		96LLC014-MB1S	02/08/96 14:41:07	RAW2: B8672985	02089646.12	12
		96LLC014-MB1	02/08/96 14:21:30	RAW2: B8672978	02089646.11	11
		INST. BLANK	02/08/96 14:01:50	RAW2: B8672968	02089646.10	10
		9602L916-013 (DD		RAW2: B8672966	02089646.09	60
		9602L916-018	02/08/96 13:22:35	RAW2: B8672956	02089646.08	80
		9602L916-009	02/08/96 13:02:58	RAW2: B8672953	02089646.07	07
		9602L916-004	02/08/96 12:43:20	RAW2: B8672946	02089646.06	90
=		96LLC013-MB1S	02/08/96 12:23:40	RAW2: B8672939	02089646.05	05
		96LLC013-MB1	02/08/96 12:04:01	RAW2: B8672932	02089646.04	04
		STD 461118D	02/08/96 11:44:23	RAW2: B8672928	02089646.03	03
		STD 461118D	02/08/96 11:24:42	RAW2: B8672922	02089646.02	02
			02/08/96 11:05:02	RAW2: B8672894	02089646.01	01
	* 2	المارازا	DAIS/ LINE	יי חו פוון	SAMPLE 1D	
COMMENTS	; !	MOTEGRADORA				

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WES	WESTON®		HPLC ANA	HPLC ANALYSIS LOG		7	
INSTRUMENT #:	ENT #:		MOBILE PHASE: \lesssim	See 6 9e	ANA! YST.		
DETECTOR:	ä.			9	EI OW BATE		1
WAVELENGTH:	VGTH:		COLUMN TYPE:		COLLINA SEBIAL 4:	DIAL 4:	1
CALIBRA	CALIBRATION STANDARD		SPIKING STANDARD		COLUMN SE	NAL #:	1
	SAMPLE ID	FILE ID	DATE/TIME	DESCRIPTION	TID #	COMMENTS	
01	02099646.01	RAW2: B9673290	02/09/96 08:56:39	STD 461118D			$\overline{}$
20 0	02099646.02	RAW2:B9673299		STD 461118D			
0 4	02099646.03	RAW2:B9673300 RAW2:B9673307	02/09/96 09:35:59	STD 461118D		19h1(1) (1 1) rimer	П
05	02099646.05		02/09/96 09:55:39	9602L963-004		3	
90	02099646.06			96021,963-009		CH yellout -mals	
04	02099646.07			9602L916-023D1 (ec		10 96011 916-006	
800	02099646.08	RAW2:B9673331	02/09/96 11:14:13			11 6647 42	$\overline{}$
10	02099646.09	RAW2:B9673337		96LLC017-MB1			T
11	02099646.11	RAW2: B9673353	02/09/96 11:53:30	96LLC017-MB19 1		1.7: 46021963-026	
12	02099646.12		02/09/96 12:13:09	9602L916-0066015 2	060-270	11 960-1965-078	T
13	02099646.13			96021,963-026	calc.		
14	02099646.14			IBLK 200 4		1 6 46 4(0) 1+mBI	
15	02099646.15			STD 461118D	2011 JUNE	1947 C. 2007	T
17	02099646.17	KAW2:B9673415 RAW2:B9673419		9602H963-028 2	Wash dir	2461101141101	T
18	02099646.18	RAW2: B9673421	02/09/96 14:10:59 02/09/96 14:10:35	96LLC016-MB1			
19	02099646.19			96021,963-027			
20	02099646.20	RAW2:B9673439		9602L963-029			_
21	02099646.21			9602L963-031			- 1
7 (02099646.22	RAW2:B9673460	02/09/96 15:49:07	9602L963-033 QD			-
23	7		02/09/96 16:08:43				7
24	02099646.24	RAW2:B9673467	02/09/96 16:28:19	Ω			
RFW 21-214	RFW 21-21-022/B-01/92			REVIEWED BY/DATE	H i	G. Leinweller 2/12/96	7

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WES	WESTON®				HPLC ANA	HPLC ANALYSIS LOG		
INSTRUMENT #:	AENT #:				MOBILE PHASE: Selag	1 de 1	ANALYST:	·
DETECTOR:	SH.					>	FLOW RATE:	
WAVELENGTH:	NGTH:				COLUMN TYPE:		COLUMN SERIAL #:	RIAL #:
CALIBRA	CALIBRATION STANDARD	(RD			SPIKING STANDARD			
¥	ANALYSIS							
DATE	TIME	N S	돌호	TRAY NO:'	RFW SAMPLE NUMBER	CLAS ID #	LOT ID #	COMMENTS
25	02099646.		RAW2: B96	9673477	02/09/96 16:47:56	9602L963-035D1		
56	02099646.26		RAW2: B96	19673489	02/09/96 17:07:34	IBLK		
1 27	02099646.27	•	RAW2: B96	9673495	02/09/96 17:27:15	STD 461118D		
28	02099646.28	_	RAW2: B96	9673499		96LLC017-MB1A1	10000-1000	
53	02099646.29		RAW2: B9673513	73513		96LLC017-MB1SA		
30	02099646.	.30 R	RAW2: B96	19673517	02/09/96 18:26:04	9602L916-006A1		
31	02099646.	.31 R	RAW2: B9673524	73524	02/09/96 18:45:42	9602L916 025A1		
32	02099646.	.32 R	RAW2: B9673535	73535	02/09/96 19:05:19	9602L963-026A1		
33	02099646.33		RAW2: B9673539	73539	02/09/96 19:24:54	9602L963-028A1		
34	02099646.34		RAW2: B96	19673550	02/09/96 19:44:29	96LLC019-MB1		
35	02099646.35		RAW2:B9673560	73560	02/09/96 20:04:06	96LLC019-MB1S		
36	02099646.36		RAW2: B96	19673569	02/09/96 20:23:44	9602L974-001 (00		
37	02099646.37		RAW2: B9673577	73577	02/09/96 20:43:21	9602L999-001 (00		٠
38	02099646.38		RAW2:B9673581	73581	02/09/96 21:02:57	IBLK		
39	02099646.39	_	RAW2:B9673591	73591			700	
40	02099646.40	_	RAW2: B9673604	73604		9602L999-002 100		
41	02099646.41	_	RAW2: B9673612	73612		9602L974-001D1		
42	02099646.42		RAW2: B9673622	573622	02/09/96 22:21:31	9602L999-001A1	70 (OLE)	
43	02099646.43			89673633			al.L	
44	02099646.	.44 F	RAW2: B96	89673641	02/09/96 23:00:43	9602L963-035D2 (0		
45	02099646.	.45 F	RAW2: B96	89673645	02/09/96 23:20:20	96LLC018-MB1		
46	02099646.46		RAW2: B90	B9673658	02/09/96 23:39:58	96LLC018-MB1S		
47	02099646.47		RAW2: B9673663	573663	02/09/96 23:59:36	9602L952-001		
48	02099646.48	•	RAW2:BA	BA673672	02/10/96 00:19:12	9602L952-002		
RFW 21-21	RFW 21-21-022/8-01/92					REVIEWED BY	(/DATE G L	REVIEWED BY/DATE & LEMMAR 2/10/

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WESTON®	HPLC ANALYSIS LOG	
NSTRUMENT #:	MOBILE PHASE: Saluge	ANÁLYST:
WAVELENGTH:	COLUMN TYPE:	COLUMN SERIAL #:
CALIBRATION STANDARD	SPIKING STANDARD	

WAVELENGTH:	IGTH:				COLUMN TYPE:		COLUMN SERIAL #:	RIAL #:
CALIBRAT	CALIBRATION STANDARD	ARD			SPIKING STANDARD			
A A	ANALYSIS							
DATE	TIME	₩ 8 8 8	물호	TRAY NO	RFW SAMPLE NUMBER	CLAS ID #	FOT ID #	COMMENTS
49	02099646.	.49 R	RAW2: BA673682	573682	02/10/96 00:38:47	9602L952-003		
20	02099646.50		RAW2:BA673691	573691~	02/10/96 00:58:24	INST. BLANK		
51	02099646.51		RAW2:BA673693	573693	02/10/96 01:18:05	STD 461118D		
52	02099646.52	_	RAW2:BA673703	573703	02/10/96 01:37:43	9602L952-004		
23	02099646.53		RAW2:BA673712	573712	02/10/96 01:57:18	9602L952-005		
54	02099646.54	•	RAW2:BA673717	673717	02/10/96 02:16:53	9602L952-007		
52	02099646.55	_	RAW2:BA673724	673724	02/10/96 02:36:30	9602L952-008		
95	02099646.56		RAW2:BA673734	673734	02/10/96 02:56:09	9602L952-009		0000
57	02099646.57		RAW2:BA673743	673743	02/10/96 03:15:46	9602L952-010		(/kag/, k/
58	02099646.58	_	RAW2:BA673749	673749	02/10/96 03:35:22	9602L952-011		4516
29	02099646.59		RAW2:BA673753	673753	02/10/96 03:54:56	9602L952-012		
09	02099646.60		RAW2:BA673765	673765	02/10/96 04:14:33	9602L952-013	=	
[e1	02099646.61		RAW2:BA673770	673770	02/10/96 04:34:11	9602L952-014	//AuR.	
62	02099646.62		RAW2:BA673774	673774	02/10/96 04:53:49	INST. BLANK		
63	02099646.63		RAW2:BA673781	673781		STD 461118D		
64	02099646.64		RAW2: BA673788	673788	_	9602L952-015		
. 65	02099646.65	. 65	RAW2:BA673792	673792		9602L952-015S		
99	02099646.66	99.	RAW2: BA673797	1673797		9602L952-015T		
67	02099646.67	.67	RAW2:BA673805	1673805		9602L952-016		
89	02099646.68	.68	RAW2:BA673810	1673810		INST. BLANK		
69	02099646.69	69.	RAW2:BA673815	1673815 I	02/10/96 07:11:18	STD 461118D		
					×	and of Duene		
RFW 21-21	RFW 21-21-022/B-01/92					REVIEWEI	REVIEWED BY/DATE (9. K	3. Linus Co c/12/90

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HPLC ANALYSIS LOG

INSTRUMENT *		Son Base 1	
	MODILE PHASE:	100 XX	ANALYSI
DETECTOR:		•	FLOW RATE:
WAVELENGTH	COLUMN TYPE:		COLUMN SERIAL #:
CALIBRATION STANDARD	SPIKING STANDARD		

	တ								-						
	COMMENTS								-						
	FOT ID #						नहार्स्य र	991							
	DESCRIPTION	STD 461118D	STD 461118D	STD 461118D	9602L952-005	96021952-008	9602L952-015S	" Knsp. Brank Sto 46!							
	DATE/TIME	02/10/96 09:24:51	02/10/96 09:44:32	02/10/96 10:04:12	02/10/96 10:23:50	02/10/96 10:43:30	02/10/96 11:22:50	02/10/96 11:42:30 htt. Wight BLANK TO 4611100				7	The Man	1 march	D
	FILE ID	RAW2:BA673848 ,,		,			RAW2:BA673902	RAW2: BA673908							
ANALYSIS	SAMPLE ID	02109646.01	02109646.02	02109646.03	02109646.04	02109646.05	02109646.07	02109646.08	_		/				
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CALIBRATION STANDARD 46 113/4102401 INSTRUMENT #: #100 #2 254 MW DETECTOR: HT 1650 LIV WAVELENGTH: _

MOBILE PHASE: (401 1/20/401. ACM **HPLC ANALYSIS LOG**

COLUMN TYPE: Zuchax SPIKING STANDARD __

ANALYST: (S. harmel COLUMN SERIAL #: CL FLOW RATE: LISMA

		COMMENS						-										
	STD 461130F		STD 461130C (0.256			$\frac{1}{100} \frac{1}{41024011} \frac{1}{100} \frac{1}{100}$	41024011C	41024011B	SID 41024011A	9601L838-001	9601L838-002	9601L838-004	9601L838-006 96011.838-008	INST. BLANK	STD 461130D	2579/42024011D	2	
	02/06/96 09:41:44 9	02/06/96 10:56:55	02/06/96 11:34:29 02/06/96 12:12:05	12:49:40		14:50:37	15:13:12	02/06/96 15:35:47 8	16:20:55	16:43:29	17:06:02	02/06/96 17:28:37 9	18:13:43	18:58:48		12 02706/26 Hills 126 2	1) Kenneth C	
	RAW2:B6672149 RAW2:B6672161	RAW2:B6672171	RAW2:B6672186	RAW2: B6672197	RAW2:B6672208 RAW2:B6672221	RAW2: B6672232	RAW2:B6672236	RAW2:B6672243	RAW2: B6672258	RAW2:B6672264	RAW2:B6672274 DAW2:B6672294	RAW2:B6672292	RAW2:B6672301	RAW2:B6672318	RAW2:B6672324	KAW2:B6672339		
	02069602.01	02069602.03	02069602.05	02069602.06	02069602.08	02069602.09	02069602.10	02069602.12	02069602.13	02069602.14	02069602.15	02069602.17	02069602.18	02069602.20	02069602.21	77.700000		V
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HPLC ANALYSIS LOG

ANALYST:	FLOW RATE:	COLUMN SERIAL #:		
MOBILE PHASE: SOR Page 8	<u></u>	COLUMN TYPE:	SPIKING STANDARD	
INSTRUMENT #:	DETECTOR:	WAVELENGTH:	CALIBRATION STANDARD	

	SAMPLE ID	FILE ID	DATE/TIME	DESCRIPTION	# QI I(COMMENTS
٠	02099602.01		02/09/96 15:20:12	STD 461130D		
_	02099602.02	RAW2:B9673457	02/09/96 15:42:49	STD 461130D		
J	02099602.03	RAW2: B9673463	02/09/96 16:05:26	STD 461130D		
J	02099602.04	RAW2:B9673468		96021.916		# # 14 CCM (1-X)
J	02099602.05	RAW2: B9673482		Ξ		DXA YZZZIO WINES
_	02099602.06	RAW2:B9673490		96021.916-013		and A
_	02099602.07	RAW2:B9673498				
_	02099602.08			9602L916-024D1 M		and 02206 for
_	02099602.09	-		96021,916-026		7 / 2 20
_	02099602.10	RAW2: B9673525		96021963-019		100 Em (12/12/16
_	02099602.11			Ξ		-
_	02099602.12	: RAW2:B9673545				
_	02099602.13	RAW2:B9673555		96021.963-024D1 God		
_	02099602.14	RAW2: B9673566				
J	02099602.15			STD 461130D		
J	02099602.16	RAW2: B9673580		96021.916.020		
J	02099602.17			96071,916-023		
J	02099602.18			2	2	
J	02099602.19			96021.963-030		
J	02099602.20				1, an	
J	02099602.21			960-1967-1967	dean	
J	02099602.22			2		
	02099602.23	RAW2: B9673657		96021.974001		
J	02099602.24	RAW2: B9673666		9602L999-001 (A)		

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HPLC ANALYSIS LOG SPIKING STANDARD _ MOBILE PHASE: COLUMN TYPE: CALIBRATION STANDARD __ INSTRUMENT #:_ WAVELENGTH: _ DETECTOR: _

FLOW RATE: ANALYST: __

COLUMN SERIAL #:

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ш.	TIME NO.	골칭	NO NO	RFW SAMPLE NUMBER	CLAS ID #	LOT ID #	COMMENTS
	02099602.25	RAW2:B	RAW2: BA673675	"02/10/96 00:23:26	L		
	02099602.26	RAW2:B	RAW2:BA673685	02/10/96 00:46:01			
	02099602.27	RAW2:B	RAW2:BA673692	02/10/96 01:08:34	STD 461130D		
	02099602.28	RAW2: E	A673702	02/10/96 01:31:05			
	02099602.29	RAW2:E	A673709	02/10/96 01:53:36			
	02099602.30	RAW2:E	RAW2:BA673718	02/10/96 02:16:08	9602L963-035 O		
	02099602.31	RAW2:E	RAW2: BA673727	02/10/96 02:38:42	9602L963-035D1 00		
	02099602.32	RAW2:E	3A673735	02/10/96 03:01:14	IBLK		•
	02099602.33	RAW2:E	RAW2:BA673746	02/10/96 03:23:46	461130D	1010	
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INSTRUMENT #:

HPLC ANALYSIS LOG

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MOBILE PHASE:

FLOW RATE: ANALYST:

COLUMN SERIAL #:

CALIBRATION STANDARD

WAVELENGTH: DETECTOR:

SPIKING STANDARD

COLUMN TYPE:

COMMENTS # QI LC Atulian 30% ત ત 9602L963-034D1 300 9602L916-026D1 9602L963-032D1 DESCRIPTION 9602L916-025 9602L952-009 9602L952-010 9602L952-004 STD 461130D STD 461130D STD 461130D STD 461130D IBLK 02/10/96 10:34:19 02/10/96 09:26:27 02/10/96 09:49:04 02/10/96 10:11:41 02/10/96 10:56:54 02/10/96 11:19:29 02/10/96 11:42:05 02/10/96 12:27:11 02/10/96 12:49:46 12:04:38 02/10/96 13:12:22 02/10/96 13:34:57 DATE/TIME 02/10/96 RAW2: BA673850 " RAW2:BA673868 RAW2: BA673872 RAW2: BA673889 RAW2: BA673909 RAW2: BA673915 RAW2: BA673929 RAW2:BA673878 RAW2: BA673898 RAW2: BA673924 RAW2:BA673936 RAW2: BA673947 FILE ID 02109602.01 02109602.02 02109602.03 02109602.05 02109602.06 02109602.07 02109602.08 02109602.09 02109602.10 02109602.11 02109602.04 02109602.12 SAMPLE ID 03 90 07 08

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Standards Preparation Records

558 COMPONENT CONC. (w/units) Logbook #: SOLVENT Date Opened FINAL Preparation of Stock Mixture Solution (Multi-Component) Ampule 1D ပ ۵ ш œ HPLC STANDARDS PREPARATION LOG are traceable tricular Mascrali namice Teat No. 731/2/c5689 5' yyo, = Punky x Gravmatic Conc STANDARD **EXPIRATION DATE:** % PURITY DATE REMOVED1: STOCK PARENT (GC/FID) (тщей) Concentration Concentration Purity % Gravimetric Analyte Accu : MeOH (9:1) 15 Components 866-380 Custom Explosives Calibration Mix EXPITATION: On-going Stability margord PRODUCT: EPS00872

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WESTON®

DATE/ANALYST:

Date removed is the date the standards are given to the Waste Disposal Unit for disposition.

Component

SOLVENT:

DESCRIPTION:

EM SCIENCE A Division of EM Indu P.O. Box 70 Gibbstown, NJ 08027 Gibbstown, NJ 08027

107

CERTIFICATE OF ANALYSIS

8/11/9/

X) =- Itiliz

REVIEWED BY/DATE:

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PAGE #

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RFW 21-21-036/D-03/94

bonent) Logbook #: 4611 First Component Conc. (w/units)	(m)	etad lesodsid	pe (400) 335-00	medo esso	H G G G G G G G G G G G G G G G G G G G		
Preparation of Stock Mixture Solution (Multi-Component) בּצּמְלְנְאַנִיּ כְּ שְּׁלְנִיּ בְּ שְּׁלְנִי בְּ שְּׁלְנִי בְּ שְׁרְנִי בְּשְׁרְנִי בְּשְׁרְנִי בְּשְׁרְנִי בְּשְׁרָבְּ בְּשְׁרָבְ בַּאַרְנִי בְּשְׁרָבְ בַּאַרְנִי בְּשְׁרָבְ בַּאַרְנִי בְּשָׁרָבְ בַּאַרְנִי בְּשָׁרָבְ בַּאַרְנִי בְּשָׁרָבְ בַּאַרְנִי בְּאַרְנִי בְּאַרְנִי בְּאַרְנִי בְּאַרְנִי בְּאַרְנִי בְּאַרְנִי בְּאַבְּנִי בְּאַרְנִי בְּאַרְנִי בְּאַרְנִי בְּאַרְנִי בְּאַרְנִי בְּאָרְנִי בְּאָרָב בַּאָרְנִי בְּאָרְנִי בְּאָבְּרִנְיִי בְּאָרָנִי בְּאָבְּרִנְיִי בְּעָבְּיִי בְּאָבְנִי בְּאָבְיִי בְּיִבְּעָּבְּיִי בְּיִבְּבְּעָּבְּיִי בְּיִבְּבְּעָּבְּיִי בְּיִּבְּבְּבְּעַבְּיִי בְּיִּבְּבְּבְּעָבְּיִי בְּבְּעָבְּבְּבְּעָבְּבְּבְּבְּעָבְּבְּבְּבְּבְּבְּבְּבְּבְּבְּבְּבְּבְּב	S<2000 Z	Lot Standards Team No. 731 Lot Count. # Purity is Grave Count Menages:	Z. AW				BEVIEWED RY/DATE
MESTON® Preparation of Stoc 461129 DATE/ANALYST: 1219995 (2000)	going Stability (LogmL) (Log	EXPIRATION: O	COLUMN A	1027 1121 166 166 1682 1999 1121 166 1996 12755 188¥3	CEPSO0314	DESCRIPTION:	Ð

PAGE #

29

RFW 21-21-036/D-03/94

Preparation of Standard Dilutions (Single Component) HPLC STANDARDS PREPARATION LOGBOOK

DATE REMOVED'	T W	187	2/9	j	1/2 3/1/	1/2/9/	1418 c/17	a de	<i>(c/</i>	(6)	,
	3	3/3	5 ac 2/	15/2	116, 01	1 1 m	12/2	1/4/ (((4)	79/1	1/4/	1/4
E/ REVIEWED	strong	spuls of	35	200	10 SI	65 2	13 P	95 /2	Je Pe	19 Ja	Fr.
D DATE/ ANALYST			الد الم	で で で で	13	-1 02		L C	1/2 (C)	3/2	15 TK
PREPARED STANDARD CONC.	(w/units) 1000 ug/m	Sougher	20 m/m	71/5,, (75)	100 m/m	/ F (0)	100 ins/11	143 2h	, 98b	the	.72
SOLVENT	Herene	AcN	W)(DCM	Sportane	Scature	Bockine	Healf/Act			
TOTAL VOLUME (mL)	10mC	25 mL	Iml	5ml	Inl	Ju)	=) <u>"</u>	<u>_</u> الأ	72	7
PARENT VOLUME (mL)	Tngoj	Trasel		1			•				
PARENT CONC. (w/units)	100 mg	(1000mg/mt 1350nt	·	·							
PARENT STANDARD I.D.	4102 1307	Lis1201h	450519418118	Acustanians	Aca Sta	Aca, Std ()84-259	Accustd 123-192	されなるの	12051	なないできずっています	EMSIANE 13-157
STANDARD DILUTION LD.	41023801	41023862	4102863	4103804	41023605	32867014	41023807	411.23808	41023805	9859	4(023811
COMPOUND	Kensene	iciphenylene	KEROGALE	MEET WIT	Grank)强炬!	Jerlysme Mer	HWX	ZZ ZZ	1,3,5-[NB	1,3-MB

'Date removed is the date standards are given to the Waste Disposal Unit for disposition.

RFW 21-21-036/C-03/94

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HPLC STANDARDS PREPARATION LOGBOOK Preparation of Standard Dilutions (Single Component)

, [c) C ('	<i>(c, t)</i>	<i>[c/c:</i>		[c/"	d/((((((((((((((((((((((6/1	<u>Č</u>	Till the second
: 407	DATE REMOVED											12- 32
Logbook #:	REVIEWED BY/DATE	9/1/81	2/2/2	9714	94	977	91/4	27/4/2	g 27/47	200	P 6	6m
	DATE/ ANALYST	23	2.2 F	C/V	2.8 7.	6/1/95	2.3 3.3	23	2 ju	200	est.	
	PREPARED STANDARD CONC. (w/units)	000)	000	706)	/0xx/	hol	(1900)	886	970	0%	683	
	SOLVENT	1.5)										
	TOTAL VOLUME (mL)				_	_	_	_	/	/		
	PARENT VOLUME (mL)							,				
	PARENT CONC. (w/units)	STATE OF THE PARTY										#100 #
	PARENT STANDARD I.D.	CHSienue 114-219	My 625-101	EM Sime	14-239	(A) Suma / 1/20	EM51.conce 124+511	EM Spry act	CM Signer (174-324	157 - 157 015-152	(14-238)	honorally
	STANDARD DILUTION L.D.	41038701	41025942	41623903	41623904	4123905	416239CG	41623107	41023708		91623910	1118-24/1
	COMPOUND	Nithensense	TAIN	J-Amine . 4,6 . DNT	1- Animo 2,6-7NT 41623504	加工	7.6-DUT	2.4-DNT	3-11:hoblvene	1 Nitothlene Me23907	3-Kindalvene	Eth feathgat 4102 3977

'Date removed is the date standards are given to the Waste Disposal Unit for disposition.

RFW 21.21.036/C-03/94

PAGE #

Preparation of Stock Mixture Solution (Multi-Component) HPLC STANDARDS PREPARATION LOG

46 1130 Explosive Conf. Mix EXPIRATION DATE: Ce/1/96 MIXTURE I.D.#:

Logbook #: 4611

53

DATE/ANALYST: 1/3/96 (3-Lennureleer	96 (2 Leanwelger		DATE HEMOVED:				TUBNOOF
COMPONENT	DESCRIPTION	STOCK PARENT or NEAT	ineat only/	WEIGHT/VOLUME (w/units)	FINAL VOLUME (mL)	SOLVENT	CONC. (w/units)
Lwc		-410 L 380 K	993 49 IL	276.9 WL	SML	ACN	SSuglac
7 H 2		- 4107. 28.05.	986	136.9		_	100
KOX G. H.		1,22 2810	h8b	32.0			6.3
135-1 NB		4023811	482	32.1			6.3
N. trabenzene		10162014	1000	32.5			6.5
Total	·	41023902	1000	64.0			8.81
TWO - U.W. CA.C		41023903	7 001	31.4			6.3
12 P		41023905	1001	31.5			6.3
TIME - AC		11023706	0001	32.5			و ک
Jud Du		41023907	7 886	31.9	\	_	6.3
9.1.2		-					
'Date removed is the date the		aste Disposal Unit for dispos		REVIEWED BY/DATE:		1.5/1	26
						367	PAGE #

30 PAGE #

RFW 21-21-036/D-03/94

HPLC STANDARDS LOGBOOK NEAT STANDARDS DOCUMENTATION

531

Logbook #: 402

	7m/2, 000/	1005 4m	·	20 ML	·					1003 Th	7
DATE REMOVED'											
DATE RECEIVED	8 ब्राइड	10/17/95	10/21/95	36/18/0/	chelsifes-	della	doples	dollas	Chil3195	Unlehs	, ,
EXPIRATION DATE	95/1/6	guigno	Unsing	Cingoling		Cingcing				Ongoing	-
PURITY %			41.7	١	1/66	78.7	38	99	49	986	
VENDOR LOT ID	104.375	DS-1(88)	920 331	01/10	1/66 FS +4097-1XH	860-111	01-1535-90	HK-27456-49	66 F1-3245-VAII	095-233 98.6 Duping	
VENDOR	Enscience	Shtoosds	CIM Stibuce GPH OCI 3 4	CM Scieme EPH00136	Radiun ERD-ODE	EMEGIENE	Rudiun ERR-005	Radian ERD-413	Мафія (Д.) -014	haustandard N-8330.55	
WESTON STANDARD ID	4102076/	41020792	411/20103	41620704	41020705	41626746	414207914	41020798	41020409	41020910	
COMPOUND	Nondyanin	Fhylene Grite	7H-Dibenzo(c,g)carbazde	Dibenzo(a, h) pyrene	Dibenzo(a)i) pyrene	3 - Methylcholanthrene	(K12c(1)flurantheme	Nibenz(g,h) acridine	Dikhz(a)) accidine	1,2-Dintrobenzene	RFW 21-21-036/F-03/94

REVIEWED BY/DATE: _

'Date Removed is the date the standards are given to the Waste Disposal Unit for disposition.

Page #:

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WESTON®

HPLC STANDARDS PREPARATION LOGBOOK Preparation of Standard Dilutions (Single Component)

	Pre	Preparation of S	tandard [)ilutions	(Singl	of Standard Dilutions (Single Component)	lent)	Log	Logbook #:	4107	
COMPOUND	STANDARD DILUTION I.D.	PARENT STANDARD LD.	PARENT CONC. (w/units)	PARENT VOLUME (mL)	TOTAL VOLUME (mt.)	SOLVENT	PREPARED STANDARD CONC. (w/units)	DATE/ ANALYST	REVIEWED BY/DATE	DATE REMOVED'	ć
5		0.00	1007 ml. 0	272	72	ACN	7	8/24/sr		C 20	>
KOX	10052916	Loc 0701 h		+	+	ACN	2.705 w/m/ 1707.C	spres.		11/16/96	<i>,</i> ~_
ROX	41024002	10042015	To the second	—	+		4.		136		
Arric Did	4102 4003	41021708	1010 Th 0101	٣٢	せ0)	ACN	7/2 10		4/5/4		
D.A. A.J.	41024004	4020609	99)	/mr	10ml	ACN	1/1/20/	22/8	4/2		
711-112-C 1 1 4000	416×400F	4moros	36/1/201						0		
भिष्णा जीवि स्थापन	i	201 - 201)					2	<u> </u>		٠.
Tr. phemylene	41024006	410-19-414	1000 ug mL	120ml	Jeml	Acn	5047 ML 1/115	Z E	10aF		
Triphenyleng	4102 4007	8061 Zolh	Soomlan	Jm/	loome	ACN	Sugar	11.1/1			.,,
IM METAL OIL	╁						3	100	,	-	
104.43	80015201h	c 010201h					3	34	1		<u></u> `
1,2- DNB	500 / 201 h	41020710	1003	01810	10mg	ACN	81213	12/20/21	22/2		
C Taroland	41024010	3986043	智	0.0175	0.0125 JSOUL	LACTOR OF LACTOR	50 1/4	12/2/201	1/4/80		
4-Niholalune	4102 4011	11023409	Infm Oil	1.0 myme 74.7ul	l mL	ACN	74.7 mg/ml 2/2/96	11/1/11/11			-
,											

'Date removed is the date standards are given to the Waste Disposal Unit for disposition.

RFW 21-21-036/C-03/94

PAGE #



Preparation Logs

WESTON®

LC - GC - GC/MS EXTRACTABLES

(176) W (176) W (176) W (176) W (176) W (176) W (176) W (176) W (176) W (176) W (176) W (176) W		Initial Wt/Vol (g/mL)	Surr Mult		Final Vol (mL)	Split Mutt	GPC Y/N 2	ACN AAPrep: Acid Fraction or Pest/PCB or LC (Date/Time/Initials) Start time: End time: BN Fraction (Date/Time/Initials) Start time: BN Fraction (Date/Time/Initials)
(77c) W (17g) =4 (550) =9 (57g) =14 (20) =4 (20)) · (') · ()			10)		BN Fraction (Date/Time/Initials Start time:
(170) 24 (550) 29 (520) 24 (20)								BN Fraction (Date/Time/Initials Start time:
24 (550) 29 (579) 24 (20)								Start time: YA
29 (79) 214 (20) 19 (70)								#
194 (200)			<u> </u>					End time:
19 (36)			L					
		1 1	T		<u> </u>	1 .	1 1	
						1	14	Extraction Information
								(Date/Analyst)
			<u>L</u>				/	Filtration: N.
								Boildown:
								Blowdown:
								GPC Ready:
		\	رنای					GPC Cleanup:
		3/4						GPC #:
	die	رعليا						After GPC Boildown:
	W							After GPC Blowdown:
								Acid/Florisil/Alumina Cleanup:
								Prep Sheet: 1/3/40
								GPC Lab ID # /
								Florisii Lot #:
								Florisii Lab ID #:
			T				T	* For Surr/Spike Mult, refer to
						1		Table 1/2/3 (circle one
				38	broadt to Vila (770 pl.)			

23

Roy F. Weston, Inc. Lionville, Lab.

SAMPLE EXTRACTION RECORD

Sheet no.:

*	Client: COE-HOT GAS		C/D FACTOR	
J: ***	COE		* olids	
Method: ****	client	Adsorbent:	GPC Y/N Sc	
¥		Adı	pH Initial Surr. Spike Final Final Split GPC * WT/VOL Mult. WOL VOL Mult. Y/N Solids	:
Analyst: FK	Analyst:		Initial Surr. Spike Final Final WT/VOL Mult. Mult. VOL VOL	
Ana	Anal		Final	
LC015		-	Spike Mult.	
196 · : o _l	 	Solvent: ACN	Surr. Mult.	
Extraction Batch No: 96LLC015	Cleanup Date:	Solven	nitial T/VOL	
ction]	Clea		и на	
Extra				
96/80/	33	/15/96	ent Name Client ID	OT GAS
e: 02	Test: 0833	e: 02	Client N Clien	COE-HOT
Dat	Tes	: Dat	::	
Extract. Date: 02/08		IMS Report Date: 02/15,	Sample No:	602L963-

z z z z z z z

10.0

10.0 10.0

AFTOUT-EXPLSV-R2COMP AFTOUT-EXPLSV-R3COND AFTOUT-EXPLSV-BTCOND AFTIN-EXP-R2-COND AFTIN-EXP-R3-COND

004 0

9602L963-

10.0 10.0

1.0

10.0

1.0 1.0 1.0 1.0

0.0000

0.0

Comments:

BLK

019 0

014 0 0

024 0

96LLC015-MB1 0S

96LLC015-MB1 0

50 uL 41024009 Surrogate:

125 uL 461129B Spike:

_	_	_	_
Reason for Transfer			
Date Time			
Received By			
Date Time			
Relinquished By			
Transferred			
Extracts			

RFW #	Mtrx	pН	Initial Wt/Vol (g/mL)	Surr Mult	Spike Mult	Final Vol (mL)	Split Mult	GPC Y/N	Acid Fraction or Pest/PCB or LC (Date/Time/Initials)
1196021963-027	Ni			10		661	2	7	Start time:
2 029							1	i	End time:
31 031									BN Fraction (Date/Time/Initial
4 . 033									Start time:
5 V 035									End time:
6: Blank									
7 65	TV			V	į0	V	J	1	Extraction Information
8							,	1	(Date/Analyst)
9 !									Filtration:
10:									Boildown:
111									Blowdown:
2:									GPC Ready:
3									GPC Cleanup:
4!								İ	GPC #:
51									After GPC Boildown:
6 1									After GPC Blowdown:
7 1									Acid/Florisil/Alumina Cleanup:
8 1									
91	1								Prep Sheet: 128 56
0 i	$+\lambda$	1/	r						GPC Lab ID #:
1:	11	17/2							Florisil Lot #:
21	+	X 481	6						Florisil Lab ID #:
- 	┼┤	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	-						
4	+ .	-							* For Surr/Spike Mult, refer to Table 1/2/3 (circle one)
MENTS: KAO + Filto		mpositi	క						
of 0530 2930									

238 60

Page #

Sheet no.:

			_		-							
* *	-HOT GAS		c/D	FACTOR		200.0	200.0	200.0	200.0	200.0	200.0	200.0
Method: ****	Client: COE-HOT GAS	Adsorbent:	مد	VOL Mult. Y/N Solid		z	z	z	z	z	Z	z
2	ប	Adso	it GPC	Z. Y/k		2	~	7	7	7	7	7
CS			Spli	Mult		•	•					
Analyst: CS	Analyst:		Fina.	VOL								
Ana	Ana		Final	VOL		100	100	100	100	100	100	100
C016			pike	Mult.								10.0
7T96		ACN	ırr. S	ı]t.		10.0	10.0	10.0	10.0	10.0	10.0	10.0
Extraction Batch No: 96LLC016	Cleanup Date:	Solvent: ACN	Initial Surr. Spike Final Final Split GPC	WT/VOL Mult. Wult. VOL								
action	Cle		Hd			7	, 7	7	7	7	7	7
Extract. Date: 02/08/96 Extr	Test: 0833	: 02/08/96	Client Name	Client ID	COE-HOT GAS	AFTOUT-EXPLSV-R2-FX	AFTOUT-EXPLSV-R3-FX	AFTOUT-EXPLSV-BT-FX	AFTIN-EXP-R2-FX	AFTIN-EXP-R3-FX		
Date	Test	Date	0		5	027 0	0 6	1 0	3 0	5 0	1 0	1 0S
Extract.		LIMS Report Date: 02/08/96		Sample No:	9602L963-	02	029	031	033	035	96LLC016-MB1	96LLC016-MB1 0S

XAD + FILTER COMPOSITES; 100 mL ACN; 18 Hour Sonc 40 uL 41020710 1,2-DNB @ 1000 ug/mL\ 1.25 mL 461129B Comments:

Surrogate: Spike:

_	Ì	8	
1	_	Ž	`
	`	Ÿ	,
Reason for Transfer			
Date Time		*** *** **** *****	
Received By			
Date Time			
Relinquished By			
Extracts Transferred			

WESTON®

LC - GC - GC/MS EXTRACTABLES

Logbook #: 5055 Extract Date: 2/8/94 Extraction Batch #: 96LLC017 SDG File Y/N: Solvent: AUN AAPrep: 2/8/96 Analyst: G. hoi nucher Test: 08330 Method: KD Split Final Spike Initial Acid Fraction or Pest/PCB Y/N Vol Mult Mult Mult Mtrx Wt/Vol RFW # Or <u>LC</u> (Date/Time/Initials) (mL) (g/mL) Start time:___ W 96022 916-006 370 10 End time:___ 210 صعن BN Fraction (Date/Time/Initials) 240 3 i -023 Start time:_ 220 ~ 025 4 i End time:___ 240 96021963-026 -028 210 Extraction Information 180 -030 (Date/Analyst) 235 8 : -032 Filtration: ___ 325 - 034 Boildown:___ 10 i Blank 200 Blowdown:____ Black spile 200 11 i GPC Ready: _____ 12 GPC Cleanup: _____ 13 i GPC #: ___ 14 i After GPC Boildown: ___ 15 i After GPC Blowdown: ___ 16 i Acid/Florisil/Alumina Cleanup: 17 18 1 Prep Sheet: 2/9/96 602 19 GPC Lab ID #: _____ 20 : Florisil Lot #: ___ 21 i Florisil Lab ID #: ___ 22 i * For Surr/Spike Mult, refer to 23 Table 1/2/3 (circle one) COMMENTS: DOW/ACETONE SOISD WAS FOR B + BS Surrogane: Soul 41024101 H, 2000 1 Spike: 461129 B Reviewed Against LIMS By/DATE: This Page Reviewed By/Date:

Page #61 233

SAMPLE EXTRACTION RECORD

Roy F. Weston, Inc. Lionville, Lab.

Sheet no.:

Analyst: GL Extraction Batch No: 96LLC017 Extract. Date: 02/08/96

Method: ****

C/D FACTOR Client: COE-HOT GAS 20.0 Y/N Solids 0.0 0.0 Adsorbent: GPC Mult. Split Spike Final Final NOL Analyst: Solvent: DCM/ACETONE TO ACN Mult. VOL 10 Initial Surr. WT/VOL Mult. Cleanup Date: WT/VOL bΗ IN/OUT-EXP/SV-SB-ACE AFTOUT-EXP/SV-R1-FB Client ID Client Name LIMS Report Date: 02/09/96 COE-HOT GAS Test: 0833 020 0 0 900 Sample No: 9602L916-

ALL REQUIRED FILTRATION THROGH SODIUM SULFATE Comments:

20.0 20.0 20.0 20.0 20.0

> 0.0 0.0

2.0 2.0 2.0

10

1.0 1.0 1.0

10 10

1.0

2.0

10 10

1.0

AFTOUT-EXPLSV-R2-FB AFTOUT-EXPLSV-R3-FB AFTOUT-EXPLSV-BT-FB

026 0

030

032

028

AFTIN-EXP-R2-FB AFTIN-EXP-R3-FB

96LLC017-MB1 0

96LLC017-MB1

034

AFTIN-EXP-R1MS-FB

025 0

023

COE-HOT GAS

9602L963-

AFTIN-EXP-R1-FB

20.0 20.0

20.0 20.0

2.0 2.0

10

1.0 1.0

> 50UL 41024101 1,2-DNB Surrogate:

125UL 461129B Spike:

	 _	
Reason for Transfer		
for		
Reason		
Date Time		
Received By		
Date Time		
Relinguished By		
Extracts Transferred	V	



Other/Miscellaneous



End of Data Package

SEMIVOLATILE ORGANICS

Roy F. Weston, Inc. - Lionville Laboratory BNA ANALYTICAL DATA PACKAGE FOR COE-HOT GAS

CLIENT ID	RFW	#		MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
	-					/ /		
AFTOUT-EXP/SV-R1-CND	004				96LE0209	01/31/96	02/09/96	02/11/96
AFTOUT-EXP/SV-R1-CND	004		A1		96LE0209	01/31/96	02/09/96	02/15/96
IN/OUT-EXP/SV-SB-ACE	006				96LE0209	01/31/96	02/09/96	02/12/96
IN/OUT-EXP/SV-SB-CND	009			AI	96LE0209	01/31/96	02/09/96	02/11/96
AFTIN-EXP-R1-CND	013			ΑI	96LE0236	01/31/96	02/14/96	02/17/96
AFTIN-EXP-R1MS-CND	018			AI	96LE0236	02/01/96	02/14/96	02/17/96
AFTOUT-EXP/SV-R1-FB	020			AI	96LE0209	01/31/96'	02/09/96	02/11/96
AFTOUT-EXP/SV-R1-FX	021			AI	96LE0209	01/31/96	02/09/96	02/11/96
AFTOUT-EXP/SV-R1-FX	021		A1	AI	96LE0209	01/31/96	02/09/96	02/15/96
IN/OUT-EXP/SV-SB-FX	022			AI	96LE0209	01/31/96	02/09/96	02/11/96
AFTIN-EXP-R1-FB	023			AI	96LE0236	01/31/96	02/14/96	02/17/96
AFTIN-EXP-R1-FX	024			AI	96LE0236	01/31/96	02/14/96	02/17/96
AFTIN-EXP-R1MS-FB	025			AI	96LE0236	02/01/96	02/14/96	02/17/96
AFTIN-EXP-R1MS-FX	026			AI	96LE0236	02/01/96	02/14/96	02/17/96
LAB QC:								
SBLKSO	MB1			AI	96LE0209	N/A	02/09/96	02/11/96
SBLKSO	MB1	BS		AI	96LE0209	N/A	02/09/96	02/11/96
SBLKSO	MB1	BSD		AI	96LE0209	N/A	02/09/96	02/11/96
SBLKSX	MB1			AI	96LE0236	N/A	02/14/96	02/17/96
SBLKSX	MB1	BS		AI	96LE0236	N/A	02/14/96	02/17/96
SBLKSX	MB1	BSD		AI	96LE0236	N/A	02/14/96	02/17/96

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CHAIN OF CUSTODY

381-596a 2) 6 x 2) Unbroken on Quter Package Y or N Present on Sapriphe Sample Y or N COC Record Present Upon Sample Rec't 1) Present on Outgr るってろう Package Y or (4) Unbroken on COC Tape was: **WESTON Analytics Use Only** Ë ر ا **₩** SIZIO 2) Amborn & Chilled
3) Received a Good
Condition (Y pr N Hand Delivered Airbill # Dec Page Properly Preserved (Y) or N 5) Received Within Holding Times Samples were 1) Shipped or 4) Labels Indicate Cooler# WESTON Analytics Use Only たれる Custody Transfer Record/Lab Work Request でき 2 Samples Labels and COC Record? Y or N NOTES: Discrepancies Between coe 446 huncated from Its traces mode to firm CAN 321/60 40 EPP 8015. Select rin Semi williams of 45.36 J E 848330 くさ つかい いっかっ PCB PCSV PCSV PCSV PCSV PCSV XXXX ORGANIC E. P. Huldent >>> Time /XE DATEMENISIONS: AMOUNTE AOV Date Liquid Date Time Collected Collected Liquid Solid Received 1/3/14 #/Type Container TO OUT Refrigerator # ANALYSES REQUESTED Preservatives OCC - AB - COE-HO-INOTI-ENPLY-SB-PREIRING Volume the H6-Afrag- Explor-121-1245AN Matrix 405-46-AFTOUT-EXPSG-PL-FH5A1/ Relinquished by Chosen MS MSD 1201 *ROX, HAX, Tetry 1, 2, 4-DNT, 2,6-DNT, NOS 1,3-DNBS 3 007-008-COF-16-16-140-500-FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS DOGERACUE - WOA-ENSV-18-MICOE-H6-APPON-EXISTY -R SO Solus
8L. Sludge
W. Water
O. Oil
A. Mir
DS. Drum
Solids
COE H6-APTOVT - EXPENSE R
Solids
Solids
COE H6-APTOVT - EXPENSE R

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THE HATOV 1,3,5-TNBS 2,4,6-TNI 300 Time Client ID/Description Pate Due 2 -7/D-7/D-CLYAT IL Project Contact/Phone # J. O'MO. Date くいかいか 2 Spepuck#3 Est. Final Proj. Sampling Date Work Order # 0328/-WESTON Analysis Use Only いので一年のかった COE- HOI Date Rec'd 4 2 9 4 AD Project Manager 🖳 을으 Special instructions: L. Epricipal C. Leachaid C. Wipe C. X. Other X. Fish oc San Relinquished MATRIX RFW 21. CODES

COC Record Present Upon Sarriple Rec't 3) Present on Samole Y or N 2) Unbroken on Other Package Y of N Sample Y of N Airbill # Paris 2 Airbill # Airbill COC Tape was: 1) Present on Outel 4) Unbroken on **WESTON Analytics Use Only** 1631118358 Page ... 10 A 1 < ** \$108 2 Properly Preserved

Y or N Amotem & Chilled 5) Received Within Holding Times Samples were: 3) Received in Condition Y **WESTON Analytics Use Only** 3 3 K СИ NORG 2000 Metal たたい Explasive - MFT. エルレドア Custody Transfer Record/Lab Work Request P. INVET SAMPLES XPD and のつとう elented Samples Labels and COC Record? Y of N Y-W-Z Xellor Hef# EPA GOLS - Scheck M. 8330 Mallinguished Received Date Time Discrepancies Bet NOTES: L378 2 MAY BE LANG Dela Cindo 多物 BCB Sest **(X)** ORGANIC · Concentration Combush L377 **BNA** 16 S AOV Liquid Solid Date Time Collected Collected Liguid Solid - MUT **L375** #/Type Container OLG COE LIGHT FOR FINE KIMS CONDING DATE/REVISIONS: ANALYSES REQUESTED Preservatives tet fre fer CAPX X Volume Matrix L373 Relinquished by OF-HG-APTINEX PIXE OF-146-MOTEW-EXAMPLO * RDX; HMX; Tetry1; 2, 4-DWT; Matrix QC Chosen 1,3-DWB5 2,4,6- TNT 200 (AZX COK-HO-DIFTED - EXP-R L372 Est. Final Proj. Sampling Date Work Order # 022 Bl - 02.000 NS COE-HO METAN-EXP-DE-16 APTEN-EXP. 917 CAT 13 - AFTEN - 15.80. Time FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS Client ID/Description COE HOTSAS J 12/2/9/0 Date OMen 2,6-DWT; NB; 1,3,5-TNB: ** Pracyce . Project Contact/Phone # WESTON AND LES USE Only AD Project Manager 🖊 들으 Liquids 03 (Special Instructions: Leachate 014 RFW 21-21-001/A-7/91 Date Rec'd 2 SE - Sediment 80 - Solid 8L - Studge W - Water 0 - Oil A - Air DL - Drum WI - Wipe X - Other F - Fish MATRIX CODES: نـ

381-596a 3 Present on Sample Unbroken on Outer ecord Present Package Y or N Ż Package Y or N 1) Present on Outer Sample Rec't ō ŏ ≻ Unbroken on COC Tape was: **WESTON Analytics Use Only** Ć 0 Sample Page てユ + > 2) Ambient or Chilled 3) Received in Good 5) Received Wilhin 5 4) Labels Thdicare ō ≻ 1) Shipped or Hand Delivered Airbill # Samples were: Holding Times Properly Pres Cooler# **WESTON Analytics Use Only** 40p CN (oppy Metal **Custody Transfer Record/Lab Work Request** alage 1. bash at bol to 013 015, bas, vay, bas 14 phos all modera's on all sumples z 50,160,060,510,400d 1910109ds Discrepancies Between Samples Labels and COC Record? Y or I 1 CLUE the anson# 90 PM DOGE Ref# DEE330 1378 136 por 96Pm 1090 Негр 4001M99997 bCB best∖ ORGANIC Time HSE96 AN8 L377 AOV Date Liquid Solid Liquid Collected Solid S L375 Received Date Collected #/Type Container 12/76 ANALYSES REQUESTED Preservatives Volume Matrix L373 Relinquished Graph of the south of others MS MSD Chosen 2/20/96 conected De Kill lette for FX- FILT+XADUPNIPOSIX FB: FHS+BHS (Implicit L372 RETIV-EXP-RIMS-FB AFFOUT-EXPISA-RI-FX AFTIN-EXP-RIMS-FX PRTOUT-EXPBU-RI-FB Time FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS PFTIN-EXP.RI-FB AFTIN-EXP-RI-FX INDUTEXPISA SBEX Client ID/Description DEMILLARS Date Date Due _TAT_ Est. Final Proj. Sampling Date Received by 2007 Project Contact/Phone AD Project Manager 2 අ 000 ho 름으 460309 Special instructions: RFW 21-21-001/A-7/91 Work Order # _ Liquids EP/TCLP Leachate Relinquished S. Soll
SE. Sediment
SO. Solid
SL. Sludge
W. Water
O. Oll
A. Ar
DS. Drum Date Rec'd Account # Oil Drum Solids Drug MATRIX CODES: ၁ Cilent ٦ . . ¥×. نـ

WESTON Analytics Use Only



DATA SUMMARY

Roy F. Weston, Inc. - Lionville Laboratory
Semivolatiles by GC/MS, HSL List
Client: COE-HOT GAS

SL List Report Date: 02/21/96 16:11 Work Order: 02281012012 Paqe: 1a

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i i i i i i i i i i i i i i i i i i i		AFTIN-EXP-R1	MS-CND	018	AIR	2.50	total ug	62	75	82	64	109	11 12 13 14 14 14 14 14 14 14 14 14 14 14 14 14	25	25	25	25	25	25	25	25	25		25	25	25	25	25	25	120	25	25	25	25	25	25	25	25	25	
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2012 Page:		AFTIN-EXP-R1	-CND	013	AIR	62.5	total ug	38	69	77	41	98		620	620	620	620	620	620	620	620	620	620	620	620	620	620	620	620	3100	620	. 620	620	620	620	620	620	620	620	
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Work Order: 02281012012	`	IN/OUT-EXP/S	V-SB-CND	600	AIR	2.50	total ug	55	58	88	46	63	75	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	120	25	25	25	25	25	25	25		25	
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Wo	1	IN/OUT-EXP/S	V-SB-ACE	900	AIR	2.50	total ug	79	74	96	70	86	79	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	120	25	25	25	25	25	25	25	25	25	
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COR-HOT GAS		AFTOUT-EXP/S	V-R1-CND	004 RE	AIR	2.50	total ug	48	54	. 93	41		579	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	120	25	25	25	25	25	25	25	. 25	25	
COE		8/	Q			0	fin	*	40	∌ o	æ	do	باً م <u>د</u>	þ	Þ	D	Þ	D	D	Þ	Þ	D	Þ	Þ	Þ	D	D	Ω	D	n	D	D	n	D	D	Þ	D	Þ	D	
Client:	1	Cust ID: AFTOUT-EXP/S	V-R1-CND	004	AIR	2.50	total u	89	99	110	57	78	98	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	120	25	25	25	_ 25	25	25	25		25	·
RFW Batch Number: 96021916		Cust ID:		Sample RFW#:	ation Ma	D.F.:	Units:	Nitrobenzene-d5	Surrogate 2-Fluorobiphenyl			2-Fluorophenol			bis (2-Chloroethyl) ether	2-Chlorophenol	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Benzyl alcohol	1.2-Dichlorobenzene	2-Methylphenol	bis (2-Chloroisopropyl) ether	4-Methylphenol	N-Nitrogo-Di-n-propylamine	Hexachloroethane	Nitrobenzene	Isophorone	2-Nitrophenol	2.4-Dimethylphenol	Benzoic acid	bis (2-Chloroethoxy) methane	2.4-Dichlorophenol	1.2.4-Trichlorobenzene	Naphthalene	4-Chloroaniline	Hevachlorobutadiene	4-Chloro-3-methylphenol	2_Methylnanhthalene	Hexachlorocyclopentadiene	*= Outside of EPA CLP QC limits.

RFW Batch Number: 9602L916 Cl	Client: COK-HOT	T GAS	Work	Work Order	: 02281012012	- 1			,
Cust ID:	AFTOUT-EXP/S	AFTO	IN/OU	XP/S		AFTIN-EXP-R1		AFTIN-BXP-RI	
	V-R1-CND	V-R1-CND	>	-SB-ACE	V-SB-CND	-CND		MS-CND	}(
RFW#:	400	004 RB	0	900	600	013		018	0
2 4 6-Trichlorophenol	25 U	7 25 U	1 2	5 U	25 U	620	Ω	25	р
2 4 5-Trichlorophenol	_ 120 U		J 12	20 U	120 U	3100	Ω	120	D
2-Chloronaphthalene	- 25 U	1 25 U	J 2	D 5	25 U	620	n	25	Ð
2-Nitroaniline	_ 120 U	1 120 U	J 120	D O	120 U	3100	n	120	Ω
Dimethylphthalate	_ 25 T	J 25 t	7	25 U	25 U	620	D		D
Acenaphthylene	_ 25 t	J 25 U		25 U	25 U	620	D	25	n
2.6-Dinitrotoluene	_ 25 T	J 25 U	ח	25 U	25 U	620	D	25	Ω
3-Nitroaniline	120 [J 120 U	U 12	120 U	120 U	3100	n	120	Ω
Acenaphthene	25 1	J 25 U	, i	25 U	25 U	620	Ω	25	Ω
2 4-Dinitrophenol	_ 120 T	J 120 T	U 1.	120 U	120 U	3100	Þ	120	Ω
4-Nitrophenol	_ 120 t	J 120 t	u 1;	120 U	120 U	3100	D	120	D
Dibenzofuran	25 (J 25 t	., D	25 U	25 U	620	n	25	n
2.4-Dinitrotoluene	25 1	J 25 1	 D	25 U	25 U	620	n	25	n
Diethylphthalate	80	. 8		25 U	25 U	620	n	25	n
4-Chlorophenyl-phenylether	25 (J 25 1	n	25 U	25 U	620	n	25	n
Fluorene	25 1	U 25 1	ם	25 U	25 U	620	Þ	25	n
4-Nitroaniline	120	U 120 1	U 1	120 U	120 U	3100	Ω	120	D
4.6-Dinitro-2-methylphenol	120	U 120	T D	120 U		3100	D		D
N-Nitrosodiphenylamine (1)	25	U 25	n	25 U	25 U	620	Þ	25	Þ
4-Bromophenyl-phenylether	25	U 25	n	25 U	25 U	620	n	25	D
Hexachlorobenzene	25	U 25	n	25 U	25 U	620	n	25	Þ
Pentachlorophenol		JB 120	U 1	20 U		3100	D		ם ב
Phenanthrene		U 25	D	25 U		620	ם ו		þ :
Anthracene	25	U 25	ū	25 U		620	D '	25	þ :
Di-n-Butylphthalate	rv.	J 25	n	25 U		620	ם י		þ:
Fluoranthene	25	U 25	n			620	Þ	25	D :
Pyrene	25	U 25	Ω	25 U		1 620	Þ	25	D
Butylbenzylphthalate	25	U 25	D	25 U	25 U	1 620	Þ	25	D I
3,3'-Dichlorobenzidine	20	U 50	Ω		20 1	1200	Ω		D :
Benzo (a) anthracene	25	U 25	D	25 U	25 (1 620	Þ		D .
Chrysene	25	U 25	D	25 U	25 () 620	Þ.	25	ָ ס
bis(2-Ethylhexyl)phthalate	14	JB 8	JB	ហ	ω ·	62	ם י		; כו
Di-n-Octyl phthalate	25	U 25	n	25 U	_	62	Þ		n :
Benzo(b) fluoranthene	25	U 25	n	25 U	-	U 620			n i
Benzo(k) fluoranthene	25	U 25	n	25 U		U 620	Þ		Þ
Benzo (a) pyrene	25	Ù 25	n		S	U 620	D	25	D
Indeno(1,2,3-cd)pyrene	25	U 25	Ω	25 U		J 620	n		D
Dibenzo (a, h) anthracene	. 25	U 25	Ω	25 U	ru _	62	Þ		Þ
Benzo(q, h, i) perylene	25	U 25	Ω	25 U	25 1	62	Þ	25	Þ
Carbazole	25	U 25	•		25	U 620	Þ	25	Þ
not be separated	from Diphenylamine	. *= Outside o	of EPA CLP	QC lin	limits.				
	I		4						

Roy F. Weston, Inc. - Lionville Laboratory

Semivolatiles by GC/MS, HSL List
Client: COR-HOT GAS
Work Order: 02281012012 Page:

Report Date: 02/21/96 16:11

£0 AFTIN-EXP-R1 AFTIN-EXP-R1 25.0 total ug AIR 62.5 total ug · AIR IN/OUT-EXP/S 25.0 total ug V-SB-FX AIR AFTOUT-EXP/S 25.0 V-R1-FX total ug 021 RE AIR AFTOUT-EXP/S 25.0 total ug V-R1-FX AIR Cust ID: AFTOUT-EXP/S 2.50 total ug V-R1-FB AIR 75 p-Terphenyl-d14 Phenol-d5 RFW#: Matrix: D.F.: Units: Nitrobenzene-d5 2,4,6-Tribromophenol 2-Fluorobiphenyl 2-Fluorophenol bis (2-Chloroisopropyl) ether bis(2-Chloroethoxy)methane_ N-Nitroso-Di-n-propylamine RFW Batch Number: 9602L916 Hexachlorocyclopentadiene bis(2-Chloroethyl)ether 4-Chloro-3-methylphenol 1,2,4-Trichlorobenzene 2-Methylnaphthalene Hexachlorobutadiene 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 2,4-Dimethylphenol 2,4-Dichlorophenol Hexachloroethane 4-Chloroaniline Benzyl alcohol 4-Methylphenol 2-Methylphenol 2-Chlorophenol Nitrobenzene_ 2-Nitrophenol Benzoic acid Naphthalene Isophorone_ Information Surrogate Recovery Sample

*= Outside of EPA CLP QC limits.

	\	<		\		
RFW Batch Number: 9602L916 Clic	Client: COK-HOT	GAS /	Mork Order:	T: 02281012012	Page: 2b	APTIN-RXP-R1
Cust ID: A	CUST ID: AFIOUI-EAF/S	AFICOI-BAF/S	V-R1-FX	V-SB-FX	-73	X
RFW#:		021	021 RE	022	023	024
	200	11 030	250 11	7 250	620 U	250 U
2,4,6-Trichlorophenol	120 1	200	00	00	00	1200 U
2,4,5-IIICHIOLOPHEHOI	25 U		250 U	250 U	620 U	250 U
2-Unitroaniline	_	00	1200 U	1200 U	3100 U	1200 U
Dimethylohthalate	25 U	250 U	250 U	250 U	620 U	250 U
Acenaphthylene	25 U	250 U	250 U	250 U	620 U	•
2.6-Dinitrotoluene	25 U	250 U	250 U	250 U	620 U	250 U
3-Nitroaniline	120 U	1200 U		1200 U	3100 U	1200 U
Acenaphthene	25 U	250 U	250 U	250 U	620 U	2
2,4-Dinitrophenol			•			
4-Nitrophenol	120 U	1200 U	1200 U	_		0
Dibenzofuran	25 U	250 U	20			
2,4-Dinitrotoluene	25 U	250 U	20			20
Diethylphthalate	25 U	250 U	20			20
4-Chlorophenyl-phenylether	25 U	250 U	250 U		620 U	
Fluorene	25 U	250 U	250 U	250 U	620 U	250
4-Nitroaniline	120 U	1200 U		200	3100 U	•
4,6-Dinitro-2-methylphenol	120 U	1200 U	1200 U	00	3100 0	1200 0
N-Nitrosodiphenylamine (1)	25 U	250 U	250 U		620 U	250 0
4-Bromophenyl-phenylether	25 U	250 U	250 U		620 U	250 U
Hexachlorobenzene	25 U	250 U	250 U	250	620 U	0 062
Pentachlorophenol	120 U	1200 U	1200 U	00	3100 U	1200 U
Phenanthrene	25 U	250 U		250	620 U	250 U
Anthracene	25 U	250 U		250	620 U	250 U
Di-n-Butylphthalate	. 25 U	250 U		250		
Fluoranthene	. 25 U	250 U	250 U	250	620 U	750 U
Pyrene		250 U		250		0.00
Butylbenzylphthalate	_ 25 U	250 U		0 067	0 020	06.2
3,3'-Dichlorobenzidine		•			0071	
Benzo(a)anthracene	25 U	250 0	250 0	7 250 1	620	250
Chrysene	n c	0.52			620	36
bis (2-Ethylhexyl) phthalate	היי	0030		2 0	620	250
Di-n-Octyl phthalate	י ני	250		50	62	7
Benzo (b) fluoranthene	2. 7. 7.	250 U		250	62	
Benzo (k) I tuotantuiene	7 25 1	250 U		J 250 U	r 620 U	J 250 U
Tadano (1, 2, 2, ad) mirrono			1 250 1	J 250 U	r 620 U	8
midelio (1,2,3-cu) Pyreme		8		J 250 U	r 620 U	J 250 U
Dibenzo (a, II) ancini acene		. 2	250	U 250 U	1 620 U	
Benzo(g,n,ı)peryreme		. (3		U 250 U	ı 620 u	J 250 U
not be separated	from Diphenylamine.	*= Outside of	EPA CLP QC	limits.		
camior be separated	•					

Roy F. Weston, Inc. - Lionville Laboratory Semivolatiles by GC/MS, HSL List

	ROY F. W	i .	- Lionville Laboratory	atory)	
	Ser	(D)	by GC/MS, HSL List	T)	Report Date: 02/21/96	02/21/96 16:14	
RFW Batch Number: 96021916	Client: CO	COR-HOT GAS	Work	Work Order: 02281012012	Page:	3a	
Cust ID:	AFTIN-EXP-R1	AFTIN-EXP-R1	SBLKSO	SBLKSO BS	SBLKSO BSD	SBLESK	
	MS-FB	MS-FX					
Sample RFW#:	025	026	96LE0209-MB1	96LE0209-MB1	96LE0209-MB1	96LE0236-MB1	
Information Matrix:	AIR	AIR	AIR	AIR	AIR	AIR	
D.F.:	2.50	25.0	2.50	2.50	2.50	2.50	
Units:	total ug	total ug	total ug	total ug	total ug	total ug	
Nitrobenzene-d5	62 %	\$ 26	74 %	72 %	99	53	
Surrogate 2-Fluorobiphenyl	72 %	8 49	75 %	82 %	77 %	67	
Recovery p-Terphenyl-d14	88	83 &	81 %	84 %	75 %	72 %	
Phenol-d5	\$ 09	55 %	19 + %	19 * %	17 * \$	48 %	
2-Fluorophenol	97 %	98	46 %	36 %	31 %	79 %	
2,4,6-Tribromophenol	61 *	65 %	89	91 %	84 %	56	
	#	[]=======[18 11 18		1)	[]===============	
Phenol	_ 25 U	250 U	25 U	18 *	17 * \$		
bis (2-Chloroethyl) ether	_ 25 U	250 U	25 U	25 U	25 U	25 U	
2-Chlorophenol	_ 25 U	250 U	25 U	65 %	59	25 U	
1,3-Dichlorobenzene	_ 25 U	250 U	25 U	25 U	25 U	25 U	
1,4-Dichlorobenzene	_ 25 U	250 U	25 U	65 %	58	25 U	
Benzyl alcohol	_ 25 U	250 U	25 U	. 25 υ	25 U	25 U	
1,2-Dichlorobenzene	_ 25 U	250 U	25 U	25 U	25 U	25 U	
2-Methylphenol	_ 25 U	250 U	25 U	25 U	25 U	25 U	
bis (2-Chloroisopropyl) ether	_ 25 U	250 U	25 U	25 U	25 U	25 U	
4-Methylphenol	_ 25 U	250 U	25 U	25 U	25 U	25 U	
N-Nitroso-Di-n-propylamine	_ 25 U	250 U	25 U	77 %	70 %	25 U	
Hexachloroethane	_ 25 U	250 U	25 U	25 U	25 U	25 U	
Nitrobenzene	_ 25 U	250 U	25 U	25 U	25 U	25 U	
Isophorone	_ 25 U	250 U	25 U	25 U	25 U	25 U	
2-Nitrophenol	_ 25 U	250 U	25 U	25 U	25 U	25 U	
2,4-Dimethylphenol	_ 25 U	250 U	25 U	25 U	25 U	25 U	
Benzoic acid	_ 120 U	1200 U	120 U	120 U	120 U	120 U	
bis (2-Chloroethoxy) methane	_ 25 U	250 U	25 U	25 U	25 U	25 U	
2,4-Dichlorophenol	_ 25 U	250 U	25 U	25 U	25 U	25 U	
1,2,4-Trichlorobenzene	_ 25 U	250 U	25 U	73 %	8 67 %	25 U	
Naphthalene	_ 25 U	250 U	25 U	25 U	25 U	25 U	
4-Chloroaniline	_ 25 U	250 U	25 U	25 U	25 U	25 U	
Hexachlorobutadiene	_ 25 U	250 U	25 U	25 U	25 U	25 U	
4-Chloro-3-methylphenol		250 U	25 U	75 %	8 8 9	25 U	
2-Methylnaphthalene		250 U	ហ		25 U	2.5 U	
Hexachlorocyclopentadiene	_ 25 U	250 U	25 U	25 U	25 U	25 U	
*= Outside of EPA CLP QC limits.							

	Client: COK-HOT		X	Order: 02281012012	Page:	1	
Cust ID:	ID: AFIIN-SAF-KI	AFIIN-SAF-KI	Spring	SELVED BE	Ged Oshids	. VOUTOS	\$
RFW#:	025	026	96LE0209-MB1	96LE0209-MB1	96LE0209-MB1	96LE0236-MB1	E F (
2,4,6-Trichlorophenol	25 U	250 U	25 U	25 U	25 U	25 U	}
2,4,5-Trichlorophenol	120 U	1200 U	120 U	120 U	120 U	120 U	
2-Chloronaphthalene	25 U	250 U	25 U	25 U	25 U	25 U	
2-Nitroaniline	120 U	1200 U	120 U	120 U	120 U	120 U	
Dimethylphthalate	25 U	250 U	25 U	25 U	25 U	25 U	
Acenaphthylene	25 U	250 U	25 U	25 U	25 U	25 U	
2,6-Dinitrotoluene	25 U	250 U	25 U	25 U	25 U	25 U	
3-Nitroaniline	120 U	1200 U	120 U	120 U	120 U	120 U	
Acenaphthene	25 U	250 U	25 U	74 %	% 69	25 U	
2,4-Dinitrophenol	120 U	1200 U	120 U	120 U	120 U	120 U	
4-Nitrophenol	120 U	1200 U	120 U	19 %	19	120 U	
Dibenzofuran	25 U	250 U	25 U	25 U	25 U	25 U	
2,4-Dinitrotoluene	25 U	250 U		82 %	3 9 <i>L</i>	25 U	
Diethylphthalate	25 U	250 U	25 U	25 U	25 U	25 U	
4-Chlorophenyl-phenylether	25 U	250 U	25 U	25 U	25 U	25 U	
Fluorene	25 U	250 U	25 U	25 U	25 U	25 U	
4-Nitroaniline	120 U	1200 U	120 U	120 U	120 U	120 U	
4,6-Dinitro-2-methylphenol	120 U	1200 U	120 U	120 U	120 U	120 U	
N-Nitrosodiphenylamine (1)	_ 25 U	250 U	25 U	25 U	25 U	25 U	
4-Bromophenyl-phenylether	25 U	250 U	25 U		25 U	25 U	
Hexachlorobenzene	_ 25 U	250 U	25 U	25 U	25 U	25 U	
Pentachlorophenol	120 U	1200 U	3 J	78 %	82 %	120 U	
Phenanthrene	25 U	250 U	25 U	25 U	25 U	25 U	
Anthracene	_ 25 U	250 U	25 U		25 U	25 U	
Di-n-Butylphthalate	25 U	250 U	25 U	. 7	25 U	25 U	
Fluoranthene	25 U	250 U			25 U	25 U	
Pyrene	_ 25 U	250 U		77	% 89		
Butylbenzylphthalate	_ 25 U	250 U	. 25 U		25 U	25 U	
3,3'-Dichlorobenzidine	_ 50 U	200 U	20 n	S	20 U		
Benzo (a) anthracene	_ 25 U	250 U		7	25 U	25 U	
Chrysene	_ 25 U	250 U	25 U	25 U	25 U	25 U	
bis (2-Ethylhexyl) phthalate	ا 4 ب	36 J		. 13 JB			
Di-n-Octyl phthalate	_ 25 U	250 U	1 25 U		. 25 U		
Benzo(b)fluoranthene	_ 25 U	250 U	r 25 U	7 25 U	25 U		
Benzo(k)fluoranthene	_ 25 U	250 U	7 25 U	7 25 U	25 U	25 U	
Benzo (a) pyrene		250 U	r 25 U	r 25 U	25 U	25 · U	
Indeno(1,2,3-cd)pyrene	_ 25 U	250 U	. 25 U		25 U	25 U	
Dibenzo (a, h) anthracene							
Benzo(g,h,i)perylene				r 25 U			
Carbazole	_ 25 U	250	25	r 25 U	25 U	25 U	
(1) - Cannot be separated from Diphenylamine	phenylamine.	*= Outside of	EPA CLP QC	limits.			

Roy F. Weston, Inc. - Lionville Laboratory

Client: COE-HOT GAS

RFW Batch Number: 9602L916

Semivolatiles by GC/MS, HSL List

Work Order: 02281012012 Page: 4a

Report Date: 02/21/96 16:11

SBLKSX BSD	96LE0236-MB1 96LE0236-MB1 AIR AIR 2.50 2.50 total ug total ug
SBLKSX BS	961E0236-MB1 AIR 2.50 total ug
Cust ID:	RFW#: Matrix: D.F.: Units:
	Sample Information

	Nitrobenzene-d5	71	90	70	ф	
Surrogate	2-Fluorobiphenyl	89	æ	89	æ	
Recovery	p-Terphenyl-d14	94	%	89	.jo	
•	Phenol-d5	62	96	63	*	
	2-Fluorophenol	102	40	105	ф	
2	2,4,6-Tribromophenol	₩		71	₩ [4	
Dhenol		======================================		51	- 	
bis (2-Chloroethyl) ether	hyl)ether	25	n	25	D :	
2-Chlorophenol		99	æ	65	æ	
1,3-Dichlorobenzene	nzene	25	Þ	25	2 O	
1,4-Dichlorobenzene	nzene	52	dю	57	من	
Benzyl alcohol		25	n	22	D .	
1.2-Dichlorobenzene	nzene	25	Þ	23	5 U	
2-Methylphenol		25	D	23	2 0	
bis (2-Chloroisopropyl) ether	sopropyl) ether	25	Þ	2	ם פ	
4-Methylphenol		25	Þ	7	D	
N-Nitroso-Di-n-propylamine	-propylamine	63	₩	62	æ	
Hexachloroethane	ane	25	Þ	8	2 0	
Nitrobenzene		25	D	8	D 2	
Isophorone		25	Ω	2	2 C	
2-Nitrophenol		25	Ω	7	2 O	
2,4-Dimethylphenol	henol	25	D	7	2 n	
Benzoic acid		120	D	12	D O	
bis (2-Chloroethoxy) methane	thoxy) methane	25	D	25	2 O	
2,4-Dichlorophenol	henol	25	D	7		
1,2,4-Trichlorobenzene	robenzene	65	960	99	%	
Naphthalene		25	D	8	5 U	
4-Chloroaniline	ne	25	ם	25	5 O	
Hexachlorobutadiene	adiene	25	D	8	5 U	
4-Chloro-3-methylphenol	thylphenol	77	ж	75	φo	
2-Methylnaphthalene	halene	25	Þ	8	ر س	
Hexachlorocyclopentadiene	lopentadiene	25	D	73	5 0	
*= Outside of	*= Outside of EPA CLP QC limits.					

RFW#: 96LE0236-MB1 96LE0236-MB1

EPA CLP QC 11	25 U 25 U 25 U 25 U	25 25 25 *= Outside		25 25 25 25 amine	Indeno(1,2,3-cd)pyrene
	25 U 25 U		n	25	Benzo (b) fluoranthene
	25 U		o D	25	bis(2-Etnyinexyi)pnchalace Di-n-Octyl phthalate
	25 U		D =	25	Chrysene
	25 U		D	25	Benzo (a) anthracene
	50 U	-,	Ω	20	3,3'-Dichlorobenzidine
	25 U	••	Þ	25	Butylbenzylphthalate
	*	16	æ	81	Pyrene
	25 U		þ	25	DI-II-bucyipininaace
	25 0	•	p :	25	Anthracene
	25 U		Þ	25	Phenanthrene
	*	82	e)e	83	Pentachlorophenol
	25 U	N 10	ם כ	2 2 2 2	4-Bromophenyl-phenylether
	25 U	()	n :	25	N-Nitrosodiphenylamine (1)
	n 0	120	Ω	120	4,6-Dinitro-2-methylphenol
	D 0:	120	n	120	4-Nitroaniline
	25 U	N	D	25	Fluorene
	25 U	7	D	25	4-Chlorophenyl-phenylether
	25 U	. 73	ם פ	25	Z, 4 - Dinitional density of the property of t
	% C % C	76	>	25	Dibenzofuran
	%	28	æ	54	4-Nitrophenol
	n o	120	n	120	2,4-Dinitrophenol
	*	75	₩	9/	Acenaphthene
	n o	120	D	120	3-Nitroaniline
	5 U	25	Þ	25	2.6-Dinitrotoluene
	2 n	25	Þ	25	Acenaphthylene
	2 n	25	D	25	Dimethylphthalate
	D 0	120	Þ	120	2-Nitroaniline
	2 O	25	D	25	2-Chloronaphthalene
	n o	120	D	120	2,4,5-Trichlorophenol
	2 O	25	n	25	2,4,6-Trichlorophenol



CASE NARRATIVE



Roy F. Weston, Inc. 208 Welsh Pool Road Lionville, Pennsylvania 19341-1333 610-701-6100 • Fax 610-701-6140

LIONVILLE LABORATORY ANALYTICAL REPORT

Client: COE-HOT GAS

RFW#: 9602L916

W.O. #: 02281-012-012-1200-00

Date Received: 02 February 1996

SEMIVOLATILE

The set of samples consisted of four (4) air samples collected on 31 January 1996 and 01 February 1996. Each sampling train consisted of three fractions: condensate, solid (filter/XAD), and solvent; each fraction was analyzed and reported individually.

These samples were prepared for Method 8330 analyses on 07 and 08 February 1996; processed for Method 8270 on 09 and 14 February (see item 1), and analyzed according to criteria set forth in SW 846 Method 8270 for TCL Semivolatile target compounds on 11,12,15 and 17 February 1996.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. Four (4) mL portions of the 8330 Acetonitrile extracts were spiked with Semivolatile surrogates and partitioned into Methylenechloride. Due to the presence of Acetonitrile in the initial extracts, poor chromatography was observed in the Semivolatile analysis for samples AFTOUT-EXP/SV-R1-CND, IN/OUT-EXP/SV-SB-CND, AFTOUT-EXP/SV-R1-FX and IN/OUT -EXP/SV-SB-FX. Two extracts (AFT/OUT-EXP/SV-R1-CND and AFTOUT-EXP/SV-R1-FX) were concentrated to near dryness and brought back up to volume with Dichloromethane in an attempt to remove more of the Acetonitrile. These extracts were analyzed with improved chromatography and reported as reanalyses for confirmation of the results. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
- 2. All required holding times for extraction and analysis were met.
- 3. Non-target compounds were detected in these samples.
- 4. Three (3) of one-hundred-twenty (120) surrogate recoveries were outside EPA QC limits. However, EPA CLP surrogate recovery criteria were met {i.e., no more than one outlier per fraction (acid and base neutral) and no recoveries less than 10%}.
- 5. Two (2) of forty-four (44) blank spike recoveries were outside EPA QC limits.
- 6. The method blank 96LE0209-MB1 contained the target compound Pentachlorophenol and the common contaminant Bis (2-Ethylhexyl)phthalate at levels less than the CRQL.



- 7. Internal standard area criteria were not met for samples AFTIN-EXP-R1-FX and AFTIN-EXP-R1MS-FX. The GC/MS instrument was inspected for possible malfunction and was judged to be functioning properly and all surrogate recoveries were within QC limits; consequently, samples were not reanalyzed.
- 8. The sample IDs for this set of samples were modified (truncated) to accommodate EPA nomenclature, which allows twenty (20) characters on Organic CLP forms.

J. Michael Taylor

Vice President and Laboratory Manager

Lionville Analytical Laboratory

2-22-56

Date



GLOSSARY OF BNA DATA

DATA QUALIFIERS

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I = Interference.
- NQ = Result qualitatively confirmed but not able to quantify.
- A = Indicates that a TIC is a suspected aldol-condensation product.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case narrative.

mmz\10-94\gloss.bna



GLOSSARY OF BNA DATA

ABBREVIATIONS

Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported. BS

Indicates blank spike duplicate. **BSD**

Indicates matrix spike. MS

Indicates matrix spike duplicate. **MSD**

Suffix added to sample number to indicate that results are from a diluted analysis. DL

Not Applicable. NA

Dilution Factor. DF

Not Required. NR

Indicates Spiked Compound. SP, Z

mmz\10-94\gloss.bna



TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP Missed Peak: manually added peak not found by automatic quan program.
- PA Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

RFW 21-21-035/A-08/93

WESTON® Sample Discrepancy Report (SDR)	SDR #:	<u>96 ms 030</u>
Initiator: Deb Feick RFW Batch: 9603.0916, 963 Date: a14196 Samples: See below Client: COE-Hot Gas Method: SW846)MCAWW/CLP/	Parameter: Matrix: Prep Batch:	0205H 020 WODA 95LEDBO9
a. COC Discrepancy Transcription Error Wrong Test Code Of b. General Discrepancy Wrong Sample / Extract Container Broken Wrong Sa	on Wrong _	_ Label ID's Illegible _ Received Past Hold
2. Known or Probable Causes(s)		
3. Discussion and Proposed Action Re-log Entire Batch Following Samples: Re-leach Re-extract Re-digest Revise EDD Change Test Code to Place On/Take Off Hold (circle) Other Description: Other Description: Other Description: Other Description: Other Description: Other Description: Other Description: Other Description:	eng, eng extrac re-concentr	tin a volume te + reanalyze .
Include in Case Narrative Client Contacted: Date/Person Add Cancel Include in Case Narrative 2 Attempt b 916-004, 0 to DCM and have Keen b	21 (and 0) of and read deeren til	20 je neurony) nely se Pluse k 6 05 Pil on
5. Final Actionsignature/date: Verified re-[log][leach][extract][digest][analysis] (circle) Included in Case Narrative Hard Copy COC Revised Electronic COC Revised EDD Corrections Completed When Final Action has been recorded, forward original to QA Specialist	nged extra acoscallos noted in he	mature of spile
Route Distribution of Completed SDR Route Distribution X Initiator	on of <u>Completed</u> Is: Reichner/Dol Janic: Perrone/Li LC: Jarvis/Skrza LeMin/McIntyfe/ in: Geiger : Miller in: Brewer/Keeh	g SDR ughty eonards t/Schnell Taylor/Kasdras/Steele

	. op a		-7	SUN #.	70111
Initiator: K. Bakur	RFW Batch	:9602L963,4	916	Parameter:	SUDA
Date: 2-9-96		see belon		Matrix:	AIK
Client: COF-HOT GAS		SW846 MCAWW		Prep Batch:	
b. General Discrepancy Missing Sample/ExtractHold Time ExceededImproper Bottle Type Note: Verified by [Log-In] or [Prep Group c. QC Problem (Include all relevant) Add 0025	Container Brok Insufficient Sam Not Amenable of (circle)signature of the Specific result to the following for the fol	en	Wrong Sam Preservation f necessary) Samples	nple Pulled _ n Wrong _	C-O-C Label ID's Illegible Received Past Hold
2. Known or Probable Causes(s)					·
				, =	
	•				
4. Project Manager Instructionss	signature/date: 🕺	Bahn?	2/9/96		
Concur with Proposed Action Disagree with Proposed Action Include in Case Narrative Client Contacted: Date/Person	on; See Instructi	on			
5. Final Actionsignature/date: Verified re-[log][leach][extract Included in Case Narrative Hard Copy COC Revised Electronic COC Revised EDD Corrections Completed		is] (circle)	ther Explanat		
When Final Action has been reco					
Route Distribution of Completed S X Initiator X Lab Manager: J. Micha X Project Mgr: X Section Mgr: Siery/Dur X QA Section Mgr: Diann X QA File: Feldman/Racio X Data Reporting: Som B Sample Prep: Osei-Mens	el Taylor rke/Daniels ne Therry oppi/Shaffer Basuthakur	Route	Metals: Inorgan GC/LC MS: Lei Log-in: EDD: M	Geiger	ghty onards 'Schnell 'aylor/Kasdras/Steele

WESTON: Sample Disc	repancy κεροπ (3	ouk)	SDR #:	10010010
Initiator: K.Baker Date: 2-19-96 Client: AARP HofGas	RFW Batch: 960219 Samples: AU Method: SW846/M	16,943	Parameter: Matrix: Prep Batch:	AIK
b. General Discrepancy Missing Sample/Extract Hold Time Exceeded Improper Bottle Type Note: Verified by [Log-In] or [Prep Ground C. QC Problem (Include all relevance)	Container Broken Insufficient Sample Not Amenable to Analysis (circle)signature/date:	Wrong San Preservatio	nple Pulled n Wrong	Label ID's Illegible Received Past Hold
3. Discussion and Proposed Acti Re-log Entire Batch Following Samples: Re-leach Re-extract Re-digest Revise EDD Change Test Code to Place On/Take Off Hold (circle	Xchang	otion: C matrix h to air.	ihne approj	pn'ate
4. Project Manager Instructions Concur with Proposed Actio Disagree with Proposed Actio Include in Case Narrative Client Contacted: Date/Person Add Cancel	n	Other Explana	tion:	
5. Final Actionsignature/date: Verified re-[log][leach][extraction Included in Case Narrative Hard Copy COC Revised Electronic COC Revised EDD Corrections Completed	t][digest][analysis] (cifcle)	,		nd filing
When Final Action has been record Route	SDR R ael Taylor rke/Daniels ne Therry oppi/Shaffer Basuthakur	Noute Distribution Metals: Inorgal GC/LC MS: Le Log-in: EDD: N	n of <u>Completed</u> S Reichner/Doug nic: Perrone/Lec : Jarvis/Skrzat/ Min/McIntyre/T Geiger	SDR htty onards Schnell aylor/Kasdras/Steele



QC SUMMARY

2D SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: <u>2281-12-12</u>

Case No.: COE-HOT GAS

RFW Lot No.: 9602L916

	CLIENT	Sl	S2	S3	S4	S 5	S 6	OTHER	TOT
	SAMPLE NO.	(NBZ)#	(FBP)#	(TPH)#	(PHL)#	(2FP)#	(TBP)#		OUT
		.======	.=====	======		======	======		====
01	AFTOUT-EXP/SV-R1-CND	68	66	110	57	78	86		0
	AFTOUT-EXP/SV-R1-CNDRE	48	54	93	41	43	59		0
	IN/OUT-EXP/SV-SB-ACE	79	74 -	96	70	98	79		0
	IN/OUT-EXP/SV-SB-CND	55	58	88	46	63	75		0
	AFTIN-EXP-R1-CND	38	69	77	41	86	60		0
	AFTIN-EXP-R1MS-CND	62	75	82	64	109	68		0
	AFTOUT-EXP/SV-R1-FB	47	52	83	40	53	75		0
	AFTOUT-EXP/SV-R1-FX	68	61	85	55	74	83		0
	AFTOUT-EXP/SV-R1-FXRE	43	42	87	33	33	56	ł	0
	IN/OUT-EXP/SV-SB-FX	71	72	84	48	69	61		0
	AFTIN-EXP-R1-FB	40	82	76	55	104	62		0
	AFTIN-EXP-R1-FX	56	71	79	60	99	67		0
	AFTIN-EXP-R1MS-FB	62	72	88	60	97	61		0
	AFTIN-EXP-R1MS-FX	56	67	83	55	98	65		0
	SBLKSOLE0209-MB1	74	75	81	19 *	46	68		1 1
	SBLKSOLE0209-MB1 BS	72	82	84	19 *	36	91		1 1
	SBLKSOLE0209-MB1 BSD	66	77	75	17 *	31	84		1
	SBLKSXLE0236-MB1	53	67	72	48	79	56	!	0
	SBLKSXLE0236-MB1 BS	71	89	94	62	102	74		0
20	SBLKSXLE0236-MB1 BSD	70	89	89	63	105	71	ļ	0
]		l			l		اا

				QC LIMITS
S1	(NBZ)	=	Nitrobenzene-d5	(23-120)
S 2	(FBP)	=	2-Fluorobiphenyl	(30-115)
S3	(TPH)	=	p-Terphenyl-d14	(18-137)
S4	(PHL)	=	Phenol-d5	(24-113)
S5	(2FP)	=	2-Fluorophenol	(25-121)
S6	(TBP)	=	2,4,6-Tribromophenol	(19-122)

[#] Column to be used to flag recovery values

^{*} Values outside of QC limits

D Surrogates diluted out

SOIL SEMIVOLATILE BLANK SPIKE/BLANK SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot No.: 9602L916

BLANK Spike - Sample No.: <u>SBLKSOLE0209-MB1</u>

Level:(low/med) <u>LOW</u>

COMPOUND	SPIKE ADDED UG/L	SAMPLE CONCENTRATION UG/L	BS CONCENTRATION UG/L	BS % REC #	QC LIMITS REC
Phenol 2-Chlorophenol 1,4-Dichlorobenzene N-Nitroso-Di-n-propylamine 1,2,4-Trichlorobenzene 4-Chloro-3-methylphenol Acenaphthene 4-Nitrophenol 2,4-Dinitrotoluene Pentachlorophenol Pyrene	250 250 125 125 125 250 125 250 125 250	0 0 0 0 0 0 0 0 0 3.32	44.9 163 80.7 96.2 90.7 187 93.1 47.2 102 199 96.8	18 * 65 77 73 75 75 19 82 78 77	26 - 90 25 -102 28 -104 41 -126 38 -107 26 -103 31 -137 11 -114 28 - 89 17 -109 35 -142

COMPOUND	SPIKE ADDED UG/L	BSD CONCENTRATION UG/L	BSD % REC #	\	~ .	JIMITS REC
Phenol	_ 250	41.4	17 *	5	35	26 - 90
2-Chlorophenol	250	149	59	9	50	25 -102
1,4-Dichlorobenzene	125	72.9	58	11	27	28 -104
N-Nitroso-Di-n-propylamine	125	87.6	70	9	38	41 -126
1,2,4-Trichlorobenzene	125	84.0	67	8	23	38 -107
4-Chloro-3-methylphenol	_; 250	171	68	9	33	26 -103
Acenaphthene	125	86.8	69	8	19	31 -137
4-Nitrophenol	250	48.2	19	0	50	11 -114
2,4-Dinitrotoluene	125	94.6	76	7	47	28 - 89
Pentachlorophenol	250	208	82	5	47	17 -109
Pyrene	125	85.4	68	12	36	35 -142

[#] Column to be used to flag recovery and RPD values with an asterisk

RPD: 0 out of 11 outside limits

Spike Recovery: 2 out of 22 outside limits

COMMENTS:

5/88 Rev.

^{*} Values outside of QC limits

3D

SOIL SEMIVOLATILE BLANK SPIKE/BLANK SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: <u>2281-12-12</u>

Case No.: COE-HOT GAS

RFW Lot No.: 9602L916

BLANK Spike - Sample No.: SBLKSXLE0236-MB1

Level: (low/med) LOW

	SPIKE ADDED	•	BS CONCENTRATION		QC LIMITS REC
COMPOUND	UG/KG	UG/KG	UG/KG	REC #	.=======
Phenol 2-Chlorophenol 1,4-Dichlorobenzene N-Nitroso-Di-n-propylamine 1,2,4-Trichlorobenzene 4-Chloro-3-methylphenol Acenaphthene 4-Nitrophenol 2,4-Dinitrotoluene Pentachlorophenol Pyrene			126 164 68.3 78.4 81.2 194 95.2 136 95.7 207	51 66 55 63 65 77 76 54 77 83	26 - 90 25 -102 28 -104 41 -126 38 -107 26 -103 31 -137 11 -114 28 - 89 17 -109 35 -142

	SPIKE ADDED	BSD CONCENTRATION	BSD ·%	ક		IMITS
COMPOUND	UG/KG	UG/KG	REC #	RPD #		REC
				0	35	26 - 90
Phenol	_ 250	129	51	U		
2-Chlorophenol	_ 250	163	65	1	50	25 -102
1,4-Dichlorobenzene	125	71.4	57	3	27	28 -104
N-Nitroso-Di-n-propylamine		78.1	62	1 '	38	41 -126
1,2,4-Trichlorobenzene	1 125	82.6	66	1	23	38 -107
4-Chloro-3-methylphenol	250	187	75	2	33	26 -103
Acenaphthene	125	93.8	75	1	19	31 -137
4-Nitrophenol	250	145	58	7	50	11 -114
2,4-Dinitrotoluene	 125	94.6	76	1	47	28 - 89
Pentachlorophenol	250	205	82	1	47	17 -109
Pyrene	125	95.0	76	6	36	35 -142
	_	_	l	l	l	1

[#] Column to be used to flag recovery and RPD values with an asterisk

RPD: 0 out of 11 outside limits

Spike Recovery: 0 out of 22 outside limits

COMMENTS:

^{*} Values outside of QC limits

4B SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: <u>2281-12-12</u>

Case No.: COE-HOT GAS

Lab File ID: V021103

Lab Sample ID: 96LE0209-MB1

Date Extracted: 02/09/96

Extraction: (SepF/Cont/Sonc) SEPF

Time Analyzed: 1123

Date Analyzed: 02/11/96

Level: (low/med) LOW

Matrix: (Soil/Water) AIR

Instrument ID: 4500V

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT	LAB	LAB	DATE	ı
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ĺ
		=========	========	=======	
01	AFTOUT-EXP/SV-R1-CNDRE	9602L916-004	M021503	02/15/96	
	AFTOUT-EXP/SV-R1-FXRE	9602L916-021	M021504	02/15/96	
03	SBLKSOLE0209-MB1 BS	96LE0209-MB1S	V021104	02/11/96	
04		96LE0209-MB1T	V021105	02/11/96	
	AFTOUT-EXP/SV-R1-CND	9602L916-004	V021106	02/11/96	
	IN/OUT-EXP/SV-SB-CND	9602L916-009	V021108	02/11/96	
	AFTOUT-EXP/SV-R1-FB	9602L916-020	V021109	02/11/96	
	AFTOUT-EXP/SV-R1-FX	9602L916-021	V021110	02/11/96	
	IN/OUT-EXP/SV-SB-FX	9602L916-022	V021111	02/11/96	1
	IN/OUT-EXP/SV-SB-ACE	9602L916-006	V021211	02/12/96	ĺ
	1217,002 2022,01 00 000	Ì	· 		l

COMMENTS:

4B
SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021703 Lab Sample ID: 96LE0236-MB1

Date Extracted: 02/14/96 Extraction: (SepF/Cont/Sonc) SEPF

Date Analyzed: 02/17/96 Time Analyzed: 1113

Matrix: (Soil/Water) AIR Level: (low/med) LOW

Instrument ID: 4500V

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT	LAB	LAB	DATE
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
			=======	========
01	SBLKSXLE0236-MB1 BS	96LE0236-MB1S	V021704	02/17/96
02	SBLKSXLE0236-MB1 BSD	96LE0236-MB1T	V021705	02/17/96
03	AFTIN-EXP-R1-CND	9602L916-013	V021706	02/17/96
04	AFTIN-EXP-R1MS-CND	9602L916-018	V021707	02/17/96
05	AFTIN-EXP-R1-FB	9602L916-023	V021708	02/17/96
06	AFTIN-EXP-R1-FX	9602L916-024	V021709	02/17/96
07	AFTIN-EXP-R1MS-FB	9602L916-025	V021710	02/17/96
08	AFTIN-EXP-R1MS-FX	9602L916-026	V021711	02/17/96
		· 		

COMMENTS:

Lab Name: Roy F. Weston, Inc. Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: M021403 DFTPP Injection Date: 02/14/96

Instrument ID: 5100m DFTPP Injection Time: 1654

		% RELATIVE
.		ABUNDANCE
m/e	ION ABUNDANCE CRITERIA	=======================================
=====		44.8
51	30.0 - 60.0% of mass 198	0.01 0.0)1
68	Less than 2.0% of mass 69	58.5
69	Mass 69 relative abundance	0.0 (0.0)1
70	Less than 2.0% of mass 69	51.2/
127	40.0 - 60.0% of mass 198	0.0/
197	Less than 1.0% of mass 198	100.0
198	Base Peak, 100% relative abundance	5.3
199	5.0 to 9.0% of mass 198	20.8
275	10.0 - 30.0% of mass 198	
<u> </u>	Greater than 1.00% of mass 198	1.35
365	Present, but less than mass 443	7.2
441	Greater than 40.0% of mass 198	64.4
442	17.0 - 23.0% of mass 442	11.6 (18.0) 2
443		
l	2-Value is % m	ass 442

1-Value is % mass 69 2-Value is % mass 442

01 02 03 04 05 06 07 10 12 13 14 15 16 17 18	SSTD160 SSTD20	LAB SAMPLE ID SSTD50 SSTD80 SSTD120 SSTD120 SSTD160	LAB FILE ID ===================================	DATE ANALYZED ====================================	TIME ANALYZED ====================================
		1	!		
19	:]		1
20					
		. (

Lab Name: Roy F. Weston, Inc. Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: M021501 DFTPP Injection Date: 02/15/96

Instrument ID: 5100m DFTPP Injection Time: 1314

1		% RELATIVE
m/e	ION ABUNDANCE CRITERIA	ABUNDANCE
====		
51	30.0 - 60.0% of mass 198	49.9
68	Less than 2.0% of mass 69	0.01 , 0.0)1
69	Mass 69 relative abundance .	62.01
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	52.4
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	5.1
275	10.0 - 30.0% of mass 198	21.2
365	Greater than 1.00% of mass 198	1.32
441	Present, but less than mass 443	7.7
442	Greater than 40.0% of mass 198	64.8
443	17.0 - 23.0% of mass 442	11.9(18.3)2
		İ

1-Value is % mass 69

2-Value is % mass 442

	CLIENT	LAB	LAB	DATE	TIME
ĺ	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
-				=======================================	
01	SSTD50	SSTD50	M021502	02/15/96	1348
02	AFTOUT-EXP/SV-R1-CNDRE	9602L916-004	M021503	02/15/96	1522
03	AFTOUT-EXP/SV-R1-FXRE	9602L916-021	M021504	02/15/96	1609
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20					

DFTPP Injection Date: 02/08/96

Lab Name: Roy F. Weston, Inc. Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: <u>V020801</u>

Instrument ID: 4500V DFTPP Injection Time: 0830

	·	% RELATIVE
1 -/-	ION ABUNDANCE CRITERIA	ABUNDANCE
m/e	TON ABONDANCE ONLINE STREET	=========
=====	30.0 - 60.0% of mass 198	55.9
51		0.0 (0.0)1
68	Less than 2.0% of mass 69	63.2
69	Mass 69 relative abundance	0.01, 0.0)1
70	Less than 2.0% of mass 69	53.8
127	40.0 - 60.0% of mass 198	0.0
197	Less than 1.0% of mass 198	1 100.0 1
198	Base Peak, 100% relative abundance	· . /
199	5.0 to 9.0% of mass 198	6.1/
275	10.0 - 30.0% of mass 198	26.9
365	Greater than 1.00% of mass 198	4.52
441	Present, but less than mass 443	7.2
442	Greater than 40.0% of mass 198	61.2
!	17.0 - 23.0% of mass 442	11.8(19.3)2
443	17.0 - 23.00 02	l
l		440

1-Value is % mass 69 2-Value is % mass 442

01 SSTD50 V020802 02/08/96 0908 02 SSTD80 SSTD80 V020803 02/08/96 1108 03 SSTD120 V020804 02/08/96 1157 04 SSTD160 V020805 02/08/96 1246 05 SSTD20 V020806 02/08/96 1336 06 V020806 02/08/96 1336 10 V020806 V020806 V02/08/96 V02/08/96 11 V020806 V02/08/96 V02/08/96 V02/08/96 11 V020806 V02/08/96 V02/08/96 V02/08/96 10 V020806 V02/08/96 V02/08/96 V02/08/96 11 V020806 V02/08/96 V02/08/96 V02/08/96 11 V020806 V02/08/96 V02/08/96 V02/08/96 12 V020806 V02/08/96 V02/08/96 V02/08/96 13 V020806 V02/08/96 V02/08/96 V02/08/96 14 V020806 V02/08/96 V02/08/96 V02/08/96 V02/08/96 15 V		CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
	02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18	SSTD50 SSTD120 SSTD160 SSTD20	SSTD80 SSTD120 SSTD160	V020803 V020804 V020805	02/08/96 02/08/96	1157 1246

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021101

DFTPP Injection Date: 02/11/96

Instrument ID: 4500V

DFTPP Injection Time: 0854

	·	% RELATIVE
m/e	ION ABUNDANCE CRITERIA	ABUNDANCE
1		=======
51	30.0 - 60.0% of mass 198	42.9
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	44.0
70	Less than 2.0% of mass 69	0.0 (0.0)1
127	40.0 - 60.0% of mass 198	46.2
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.8
275	10.0 - 30.0% of mass 198	23.5
365	Greater than 1.00% of mass 198	2.97
441	Present, but less than mass 443	5.8
442	Greater than 40.0% of mass 198	47.1
443	17.0 - 23.0% of mass 442	9.0(19.1)2
i		

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1-Value is % mass 69

2-Value is % mass 442

1	CLIENT	LAB	LAB	DATE	TIME
! !	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
ļ	=======================================	=======================================	=======================================	=========	=========
01	SSTD50	SSTD50	V021102	02/11/96	0941
02	SBLKSOLE0209-MB1	96LE0209-MB1	V021103	02/11/96	1123
03	SBLKSOLE0209-MB1 BS	96LE0209-MB1\$	V021104	02/11/96	1212
04	SBLKSOLE0209-MB1 BSD	96LE0209-MB1T	V021105	02/11/96	1301
05	AFTOUT-EXP/SV-R1-CND	9602L916-004	V021106	02/11/96	1350
06	IN/OUT-EXP/SV-SB-CND	9602L916-009	V021108	02/11/96	1528
07	AFTOUT-EXP/SV-R1-FB	9602L916-020	V021109	02/11/96	1618
08	AFTOUT-EXP/SV-R1-FX	9602L916-021	V021110	02/11/96	1707
09	IN/OUT-EXP/SV-SB-FX	9602L916-022	V021111	02/11/96	1756
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Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021201

Instrument ID: 4500V

DFTPP Injection Date: 02/12/96

DFTPP Injection Time: <u>0920</u>

68 Less than 2.0% of mass 69 69 Mass 69 relative abundance 70 Less than 2.0% of mass 69 127 40.0 - 60.0% of mass 198 197 Less than 1.0% of mass 198 198 Base Peak, 100% relative abundance 199 5.0 to 9.0% of mass 198 275 10.0 - 30.0% of mass 198 23.5			% RELATIVE
30.0 - 60.0% of mass 198 36.2 3		TON ARINDANCE CRITERIA	ABUNDANCE
51 30.0 - 60.0% of mass 196 0.0% 0.0) 68 Less than 2.0% of mass 69 42.4 70 Less than 2.0% of mass 69 0.0% 0.0) 127 40.0 - 60.0% of mass 198 44.5 197 Less than 1.0% of mass 198 0.0 198 Base Peak, 100% relative abundance 100.0 199 5.0 to 9.0% of mass 198 23.5 275 10.0 - 30.0% of mass 198 2.96	m/e	TON ADDITIONS OF THE PROPERTY	==============
68 Less than 2.0% of mass 69 0.07 0.07 0.09 69 Mass 69 relative abundance 2.0% of mass 69 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	====	20.0 60.0% of mass 198	36.2
69 Mass 69 relative abundance	! !		0.04 0.0)1
70 Less than 2.0% of mass 69		Mess than 2.00 of made of	42.40
127 40.0 - 60.0% of mass 198	! !		
197 Less than 1.0% of mass 198	!		
198 Base Peak, 100% relative abundance	! !		0.0
199 5.0 to 9.0% of mass 198 23.5 275 10.0 - 30.0% of mass 198 2.96	! !	Less than 1.0% of mass 150	100.0
275 10.0 - 30.0% of mass 198 23.50 2.960	! !		6.4.
2.96			23.5
	! - : !		2.96
365 Greater than 1.00% of mass 198	! !		5.4
441 Present, but less than mass 443 43.0		Present, but less than mass 445	43.0
442 Greater than 40.0% Of mass 190	442		· //
443 17.0 - 23.0% of mass 442	443	17.0 - 23.0% of mass 442	

1-Value is % mass 69

2-Value is % mass 442

	CLIENT	LAB		LAB		DATE	TIME
1	SAMPLE NO.	SAMPLE :	ID İ	FILE	ID	ANALYZED	ANALYZED
1	SAMPLE NO.	========	=====	=======		=========	========
07		SSTD50	i	V021202	1	02/12/96	0956
01	SSTD50	SSTD80	i	V021203		02/12/96	1119
02	SSTD80	SSTD120	i	V021204		02/12/96	1208
03	SSTD120	SSTD160	i	V021205		02/12/96	1558 _:
04	SSTD160	SSTD20	i	V021206		02/12/96	1648
05	SSTD20	551520	i				
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Lab Name: Roy F. Weston, Inc. Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021207

DFTPP Injection Date: 02/12/96

Instrument ID: 4500V DFTPP Injection Time: 1750

		% RELATIVE
m/e	ION ABUNDANCE CRITERIA	ABUNDANCE
, 0		=======================================
51	30.0 - 60.0% of mass 198	30.8
68	Less than 2.0% of mass 69	0.0 (0.0)1
69	Mass 69 relative abundance	37.4
70	Less than 2.0% of mass 69	0.0(0.0)1
127	40.0 - 60.0% of mass 198	41.8
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.0
275	10.0 - 30.0% of mass 198	25.6
365	Greater than 1.00% of mass 198	3.41
441	Present, but less than mass 443	7.3
442	Greater than 40.0% of mass 198	58.4
443	17.0 - 23.0% of mass 442	10.9(18.7)2
i		

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1-Value is % mass 69

2-Value is % mass 442

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	SSTD50	SSTD50	V021208	02/12/96	1824
02	IN/OUT-EXP/SV-SB-ACE	9602L916-006	V021211	02/12/96	2123
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19		1	<u> </u>	1	1
20]	; 	1	

Lab Name: Roy F. Weston, Inc. Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021601 DFTPP Injection Date: 02/16/96

Instrument ID: 4500V DFTPP Injection Time: 0926

,		% RELATIVE
	THE PROPERTY OF THE PTA	ABUNDANCE
m/e	ION ABUNDANCE CRITERIA	==========
=====		39.9
51	30.0 - 60.0% of mass 198	0.6 (1.3)1
68	Less than 2.0% of mass 69	49.3
69	Mass 69 relative abundance	0.0(0.0)1
70	Less than 2.0% of mass 69	55.2
127	40.0 - 60.0% of mass 198	
197	Less than 1.0% of mass 198	0.7
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.6
!	10.0 - 30.0% of mass 198	28.3
275	Greater than 1.00% of mass 198	5.50
365	Present, but less than mass 443	12.2 //
441	Present, but less than mass 198	93.2
! :	Greater than 40.0% of mass 198	17.7(19.0)2
443	17.0 - 23.0% of mass 442	
	2-Value is % m	255 442

1-Value is % mass 69 2-Value is % mass 442

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18	SSTD50 SSTD120 SSTD160 SSTD20	SSTD50 SSTD80 SSTD120 SSTD160 SSTD20	V021602 V021603 V021604 V021605 V021606 	02/16/96 02/16/96 02/16/96 02/16/96 02/16/96	1010 1148 1237 1326 1416
20	 				

Lab Name: Roy F. Weston, Inc. Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021701 DFTPP Injection Date: 02/17/96

Instrument ID: 4500V DFTPP Injection Time: 0849

1		% RELATIVE
 m/e	ION ABUNDANCE CRITERIA	ABUNDANCE
111/6		=======
51	30.0 - 60.0% of mass 198	33.2//
68	Less than 2.0% of mass 69	0.7(1.4)1
69	Mass 69 relative abundance	45.6
70	Less than 2.0% of mass 69	0.0(0.0)1
1	40.0 - 60.0% of mass 198	52.9
127	Less than 1.0% of mass 198	0.0
197	Base Peak, 100% relative abundance	100.0
198		7.20
199	5.0 to 9.0% of mass 198	29.1
275	10.0 - 30.0% of mass 198	5.46
365	Greater than 1.00% of mass 198	10.9
441	Present, but less than mass 443	83.5
442	Greater than 40.0% of mass 198	16.14 19.3)2
443	17.0 - 23.0% of mass 442	1
 		1
	1-Value is % mass 69 2-Value is % m	ass 444

1	CLIENT	LAB	LAB	DATE	TIME
i	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
		==========	=======================================	=========	=========
01	SSTD50	SSTD50	V021702	02/17/96	0923
02	SBLKSXLE0236-MB1	96LE0236-MB1	V021703	02/17/96	1113
03	SBLKSXLE0236-MB1 BS	96LE0236-MB1S	V021704	02/17/96	1201
04	SBLKSXLE0236-MB1 BSD	96LE0236-MB1T	V021705	02/17/96	1251
05	AFTIN-EXP-R1-CND	9602L916-013	V021706	02/17/96	1340
06	AFTIN-EXP-R1MS-CND	9602L916-018	V021707	02/17/96	1429
07	AFTIN-EXP-R1-FB	9602L916-023	V021708	02/17/96	1519
	AFTIN-EXP-R1-FX	9602L916-024	V021709	02/17/96	1607
08	AFTIN-EXP-R1MS-FB	9602L916-025	V021710	02/17/96	1657
09	AFTIN-EXP-RIMS-FX	9602L916-026	V021711	02/17/96	1746
10	AFTIN-EAP-RIMS-FA		1	i	İ
11			İ	i	į
12		.	1	1	1
13		•] 		1
14		[]	 	1	i
15		1	1	1	
16		<u> </u> 	i 1		1
17		1	 	 	1
18		1		 	1
19			1	1.	1
20		!		1	1
		1		. I <u></u>	.

8B SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: <u>2281-12-12</u>

Case No.: COE-HOT GAS

RFW Lot: 9602L916

Lab File ID (Standard): M021502

Date Analyzed: 02/15/96

Instrument ID: 5100m

Time Analyzed: 1348

	IS1 (DCB)		IS2 (NPT)		IS3 (ANT)	!
	AREA #	RT	AREA #	RT	AREA #	RT
	========	=====	========	=====	========	=====
12 HOUR STD	11724	8.733	46368	11.733	23101	16.167
	========	=====	=========	======	========	!=====
UPPER LIMIT	23448	9.23	92736	12.23	46202	16.67
 ================================	========	=====	========	======	=========	=====
LOWER LIMIT	5862	8.23	23184	11.23	11551	15.67
	========	=====	========	=====	========	=====
CLIENT SAMPLE				!		
NO.				1		!
	=========	=====	========	=====	========	=====
=====================================	16667	8.733	63038	11.733	32288	16.167
AFTOUT-EXP/SV-RI-CADEL	15599	8.650	58227	11.700	33092	16.150
AF 1001-EAF/SV-RI-FARD		i	į		1	

IS1 (DCB) = 1,4-Dichlorobenzene-d4

IS2 (NPT) = Naphthalene-d8

IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

Column used to flag internal standard area values with an asterisk

5/88 Rev.

8C SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 2281-12-12

Case No.: COE-HOT GAS RFW Lot: 9602L916

Lab File ID (Standard): M021502 Date Analyzed: 02/15/96

Instrument ID: 5100m Time Analyzed: 1348

	IS4 (PHN)		IS5 (CRY)		IS6 (PRY)	
	AREA #	RT	AREA #	RT	AREA #	RT
	========	=====	========	=====	=========	=====
12 HOUR STD	33003	19.833	28934	25.650	24669	30.567
	=========	=====	=======	=====		=====
UPPER LIMIT	66006	20.33	57868	26.15	49338	31.07
		=====	========	=====	=========	=====
LOWER LIMIT	16502	19.33	14467	25.15	12335	30.07
	=========	=====		=====		=====
CLIENT SAMPLE						
NO.]
	========	=====	========	=====		=====
AFTOUT-EXP/SV-R1-CNDRE	44550	19.833	32423	25.650	27966	30.550
AFTOUT-EXP/SV-R1-FXRE	46465	19.833	35451	25.650	32307	30.567
,				l		l

IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

8B SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot: 9602L916

Lab File ID (Standard): V021102

Instrument ID: 4500V

Date Analyzed: 02/11/96

Time Analyzed: 0941

		IS1 (DCB)		IS2 (NPT)		IS3 (ANT)	
Ì		AREA #	RT	AREA #	RT	AREA #	RT
ļ		=========	=====	========	=====	=========	=====
ļ	10 HOUR CAD	26253	9.000	118200	12.933	72624	18.533
į	12 HOUR STD	=========	=====	=========	=====	========	=====
	UPPER LIMIT	52506	9.50	236400	13.43	145248	19.03
		========	=====	========	=====	=======================================	=====
	LOWER LIMIT	13127	8.50	59100	12.43	36312	18.03
	LOWER DIMIT	========	=====	========	=====	========	=====
j	CLIENT SAMPLE						
	NO.			İ		1	
		========	=====	========	=====	=========	=====
01	AFTOUT-EXP/SV-R1-CND	37211	8.950	-	12.900		18.517
	IN/OUT-EXP/SV-SB-CND	39103	8.933		12.900	!	18.533
	AFTOUT-EXP/SV-R1-FB	36097	8.967	!	12.917	!	18.533
	AFTOUT-EXP/SV-R1-FX	37937	8.967		12.917	•	18.533 18.517
	IN/OUT-EXP/SV-SB-FX	35651	8.967	:	12.900	•	18.517
	SBLKSOLE0209-MB1	34581	9.317		13.050	1	18.533
	SBLKSOLE0209-MB1 BS	23976	8.967		12.917	!	18.533
	SBLKSOLE0209-MB1 BSD	24764	8.967	129296	12.917	88401	1 10.333
				l	l	l	. 1

IS1 (DCB) = 1,4-Dichlorobenzene-d4

IS2 (NPT) = Naphthalene-d8

IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

Column used to flag internal standard area values with an asterisk

5/88 Rev.

SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc. Contract: 2281-12-12

Case No.: COE-HOT GAS RFW Lot: 9602L916

Lab File ID (Standard): V021102 Date Analyzed: 02/11/96

Instrument ID: 4500V Time Analyzed: 0941

	IS4 (PHN)		IS5 (CRY)	1	IS6 (PRY)	
	AREA #	RT	AREA #	RT	AREA #	RT
	========	=====	========	=====	=========	=====
12 HOUR STD	110253	23.183	74447	29.383	59131	33.267
=======================================	========	=====	=========	=====	=========	======
UPPER LIMIT	220506	23.68	148894	29.88	118262	33.77
		=====	========	=====	=========	=====
LOWER LIMIT	55127	22.68	37224	28.88	29566	32.77
	========	=====		=====	========	=====
CLIENT SAMPLE						
NO.						1
	========	=====			========	=====
AFTOUT-EXP/SV-R1-CND	154214	23.167	101178	29.433	96692	33.317
IN/OUT-EXP/SV-SB-CND	162166	23.183	134376	29.433	112177	33.300
AFTOUT-EXP/SV-R1-FB	155324	23.183	127222	29.417	107680	33.317
AFTOUT-EXP/SV-R1-FX	162708	23.183	131866	29.400	104422	33.283
IN/OUT-EXP/SV-SB-FX	147418	23.167	106408	29.350	88164	33.233
SBLKSOLE0209-MB1	106581	23.200	102250	29.450	86605	33.350
SBLKSOLE0209-MB1 BS	138053	23.167	120368	29.333	103835	33.217
SBLKSOLE0209-MB1 BSD	138599	23.167	128902	29.367	110335	33.267
		i				İ

IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

8B SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot: 9602L916

Lab File ID (Standard): <u>V021208</u>

Date Analyzed: 02/12/96

Instrument ID: 4500V Time Analyzed: 1824

	IS1 (DCB) AREA #	RT	IS2(NPT) AREA #	RT	IS3(ANT) AREA #	RT
 ===================================	======================================	9.050	82475	===== 12.917 =====	======== 50959 ========	===== 18.500 =====
UPPER LIMIT	39382	9.55	164950	13.42	101918	19.00
LOWER LIMIT	9846	8.55	41238 ========	12.42	25480 ========	18.00
CLIENT SAMPLE				 		
=====================================	21604	8.933	=====================================	12.883	=====================================	===== 18.500

IS1 (DCB) = 1,4-Dichlorobenzene-d4

IS2 (NPT) = Naphthalene-d8

IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100% of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

8C SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: <u>2281-12-12</u>

Case No.: COE-HOT GAS

RFW Lot: 9602L916

Lab File ID (Standard): <u>V021208</u>

Date Analyzed: 02/12/96

Instrument ID: 4500V Time Analyzed: 1824

	IS4 (PHN)		IS5 (CRY)		IS6 (PRY)	
	AREA #	RT	AREA #	RT	AREA #	RT
	========	=====	=========	=====	========	=====
12 HOUR STD	77240	23.133	59629	29.467	49011	33.383
	========	=====	========		=======	=====
UPPER LIMIT	154480	23.63	119258	29.97	98022	33.88
***********	========	=====	========	=====	=========	=====
LOWER LIMIT	38620	22.63	29815	28.97	24506	32.88
=======================================	========	=====		=====	=========	=====
CLIENT SAMPLE						!
NO.						•
	========	=====		=====	=======	=====
IN/OUT-EXP/SV-SB-ACE	97411	23.150	82588	29.433	73199	33.317
· · · · · · · · · · · · · · · · · · ·				l	<u> </u>	l

IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

8B SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: <u>2281-12-12</u>

Case No.: COE-HOT GAS

RFW Lot: 9602L916

Lab File ID (Standard): V021702

Date Analyzed: 02/17/96

Instrument ID: 4500V

Time Analyzed: 0923

1		IS1 (DCB)		IS2 (NPT)		IS3 (ANT)	1
1		AREA #	RT	AREA #	RT	AREA #	RT
l l		========	=====	========	=====	========	=====
1	12 HOUR STD	15343	9.033	7 9377	12.933	55942	18.517
- 1	=======================================	========	=====	=========	=====	=========	=====
i	UPPER LIMIT	30686	9.53	158754	13.43	111884	19.02
i		=========	=====	=========	=====	=========	======
¦	LOWER LIMIT	7672	8.53	39689	12.43	27971	18.02
i		========	=====	=========	=====	=======================================	=====
i	CLIENT SAMPLE		,				. -
ĺ	NO.						
i	=======================================	=========	=====	========	=====	57020	18.517
oı İ.	AFTIN-EXP-R1-CND	21150	8.950		12.900	:	
	AFTIN-EXP-R1MS-CND	29984	8.950	!	12.883	:	18.500
	AFTIN-EXP-R1-FB	20986	8.950	,	12.900		18.517
	AFTIN-EXP-R1-FX	38246*	8.950	,	12.900		18.500
	AFTIN-EXP-R1MS-FB	32409*	8.933	122007	12.883	80825	18.517
	AFTIN-EXP-R1MS-FX	27908	8.933	106449	12.883	•	18.500
	SBLKSXLE0236-MB1	16389	9.050	92732	12.933	•	18.500
	SBLKSXLE0236-MB1 BS	18152	8.950	97286	12.900	67158	18.500
	SBLKSXLE0236-MB1 BSD	20937	8.933	110507	12.883	74066	18.500
ひヨー	PRIVOVIEDS - LIDI DOD		:	:	1	1	1
- · · ·	i	1		1	1		l

IS1 (DCB) = 1,4-Dichlorobenzene-d4

IS2 (NPT) = Naphthalene-d8

IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

8C SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Case No.: COE-HOT GAS RFW Lot: 9602L916

Lab File ID (Standard): V021702 Date Analyzed: 02/17/96

Instrument ID: 4500V Time Analyzed: 0923

	IS4 (PHN)		IS5 (CRY)		IS6 (PRY)	
	AREA #	RT	AREA #	RT	AREA #	RT
	========	=====	========	=====	========	=====
12 HOUR STD	99241	23.150	90900	29.350	70658	33.217
	=========		========	=====	========	=====
UPPER LIMIT	198482	23.65	181800	29.85	141316	33.72
=======================================	========		=========	=====		=====
LOWER LIMIT	49621	22.65	45450	28.85	35329	32.72
	========	=====		=====		=====
CLIENT SAMPLE						
NO.						
************	========	=====	=========	=====	=========	=====
AFTIN-EXP-R1-CND	111663	23.183	104726	29.350	112428	33.233
AFTIN-EXP-R1MS-CND	119173	23.167	129699	29.367		33.250
AFTIN-EXP-R1-FB	114352	23.183		!		33.250
AFTIN-EXP-R1-FX	137779	23.167	149717	29.367	!	!
AFTIN-EXP-R1MS-FB	133030	23.167		!	,	33.250
AFTIN-EXP-R1MS-FX	126558	23.150	127454	29.333	•	33.217
SBLKSXLE0236-MB1	102014	23.150	110707	29.400	112424	33.267
SBLKSXLE0236-MB1 BS	104483	23.167	110278	29.383	112934	33.267
SBLKSXLE0236-MB1 BSD	113166	23.150	126026	29.417	123967	33.300
		l	l	l		
	UPPER LIMIT LOWER LIMIT LOWER LIMIT CLIENT SAMPLE	AREA #	AREA # RT	AREA # RT AREA # RT	AREA # RT AREA # RT AREA # RT	AREA # RT AREA

IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

Data File: /chem/msbna/4500V.i/V021796.b/V021705.d Report Date: 18-Feb-1996 12:16

			CONCENTRATIONS
	QUANT SIG		ON-COLUMN FINAL
Compounds	MASS	RT EXP RT REL RT RESPONSE	(UG/ML) (UG/KG)
	*===	## ##### ##### #######################	=======================================
79 Chrysene	228.00	Compound Not Detected.	
80 Di-n-Octylphthalate	149.00	Compound Not Detected.	
81 Benzo(b) fluoranthene	252.00	Compound Not Detected.	
82 Benzo(k) fluoranthene	252.00	Compound Not Detected.	
83 Benzo(a) pyrene	252.00	Compound Not Detected.	
84 Indeno(1,2,3-cd)pyrene	276.00	Compound Not Detected.	
85 Dibenz (a,h) anthracene	278.00	Compound Not Detected.	
86 Benzo(g,h,i)perylene	276.00	Compound Not Detected.	2
			10



ADDITIONAL DOCUMENTATION

Roy (

Sheet no.:

Extraction Batch No: 96LE0209

Extract. Date: 02/09/96

Analyst: DW

Method: SEPF

Client: COE-HOT GAS

FACTOR c/p

Y/N Solida Adsorbent: GPC Mult. Split Initial Surr. Spike Final Final NOL Analyst: WT/VOL Mult. Mult. VOL Solvent: DCM Cleanup Date: Hd Client ID LIMS Report Date: 02/15/96 Client Name Test: 0625 Sample No:

25.0 25.0 25.0 2.5 2.5 2.5 2.5 1.25 1.25 12.5 1.25 12.5 1.25 1.25 1.25 1.25 12.5 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 25.0 25.0 25.0 2.5 2.5 2.5 2.5 2 .5 2 .5 5 .5 IN/OUT-EXP/SV-SB-ACE IN/OUT-EXP/SV-SB-CND AFTOUT-EXPLSV-BTCOND AFTOUT-EXP/SV-R1-CND AFTOUT-EXPLSV-R2COMP AFTOUT - EXPLSV - R3COND AFTOUT-EXP/SV-R1-FB AFTOUT-EXP/SV-R1-FX IN/OUT-EXP/SV-SB-FX AFTOUT-EXPLSV-R2-FB AFTOUT-EXPLSV-R3-FB AFTOUT-EXPLSV-R2-FX COE-HOT GAS COE-HOT GAS 022 H 014 H 026 H 020 600 900 027 021 600 028 9602L916-9602L963-

25.0

z z

2.0

2.0 2.0 2.0

25.0

2.5 2 2 5

2.5

2.0

25.0

2.5

AFTOUT-EXPLSV-BT-FB

AFTOUT-EXPLSV-BT-FX

SBLKSO SBLKSO

96LE0209-MB1 HS 96LE0209-MB1 HT

SBLKSO

96LE0209-MB1 H

AFTOUT-EXPLSV-R3-FX

029 030 031

1.25 12.5 1.25 12.5 1.25 1.25

2.5

25.0

2.5 2.5

2.5

Comments:

500 UL ESU 71A @ 100/200 UG/ML Surrogate:

500 UL EMS 28 @ 100/200 UG/ML Spike:

10	no.1 :		-		
Extracts Transferred	kelinquisned by	Date Time	Received By	Date Time	Reason for Transfer
			\ \ \	bex/) · Yh
			- C.C. Carlan	2/15/96	Terastor.
			0		

Sheet no.:

Roy F. Weston, Inc. Lionville, Lab.

ECORD	
<u> </u>	
EXTRACTION	
EXTR	
SAMPLE	

Method: SEPF	Client: COE-HOT GAS	Adaorbants
Analyst: DW	Analyst:	
Extraction Batch No: 96LE0209	Cleanup Date:	
Extract. Date: 02/09/96	Test: 0625	

FACTOR Y/N Solids GPC Split Mult. Spike Final Final VOL Mult. VOL Mult. Solvent: DCM Surr. Initial WIT/VOL Hd Client ID LIMS Report Date: 02/14/96 Client Name Sample No:

25.0 25.0 25.0 25.0 2.5 2.5 2.5 2.5 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.25 12.5 1.25 1.25 1.25 12.5 1.25 1.25 1.25 12.5 1.25 1.25 12.5 1.25 2.0 2.0 2.0 2.0 5.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.5 2.5 2.5 2.5 2.5 AFTOUT-EXPLSV-R3COND AFTOUT-EXPLSV-BTCOND IN/OUT-EXP/SV-SB-CND AFTOUT-EXPLSV-R2COMP IN/OUT-EXP/SV-SB-ACE AFTOUT-EXP/SV-R1-CND AFTOUT-EXPLSV-R3-FB AFTOUT-EXPLSV-BT-FB AFTOUT-EXPLSV-R2-FB AFTOUT-EXPLSV-R2-FX AFTOUT-EXPLSV-R3-FX AFTOUT-EXPLSV-BT-FX AFTOUT-EXP/SV-R1-FB AFTOUT-EXP/SV-R1-FX IN/OUT-EXP/SV-SB-FX COE-HOT GAS COE-HOT GAS SBLKSO 96LE0209-MB1 HS 96LE0209-MB1 H 020 H 022 H 004 H 014 1 030 031 026 028 029 600 027 96LE0209-MB1 600 021 900 9602L963-9602L916-

Comments:

500 UL ESU 71A @ 100/200 UG/ML Surrogate:

500 UL EMS 28 @ 100/200 UG/ML Spike:

Date Time Reason for italieter	Ranalyses
Date Time	als/acDes
Received By	D Feech
Date Time	50:91 96/21/8
Relinquished By	Dun Osg. W.
Extracts Transferred Relinquis	all

SAMPLE EXTRACTION RECORD

Roy F. Weston, Inc. Lionville, Lab.

Sheet no.:

Analyst: GL

Method: ****

: COE-HOT GAS

Extraction Batch No: 96LLC017

Extract. Date: 02/08/96

Test: 0833

Analyst:

Cleanup Date:

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Adsorbent:

Y/N Solids GPC Split Mult.

Initial Surr. Spike Final Final

Mult. VOL

WT/VOL Mult.

hф

Client ID

Sample No:

Client Name

LIMS Report Date: 02/09/96

Solvent: DCM/ACETONE TO ACN

c/d FACTOR

VOL

20.0

0.0

10

1.0 1.0

AFTOUT-EXPLSV-BT-FB

AFTIN-EXP-R2-FB

030 0 028

AFTIN-EXP-R3-FB

BLK

96LLC017-MB1 0S

96LLC017-MB1 0

AFTOUT-EXPLSV-R3-FB

1.0

1.0

10

1.0

1.0

ALL REQUIRED FILTRATION THROGH SODIUM SULFATE

50UL 41024101 1,2-DNB

Surrogate: Comments:

Spike:

125UL 461129B

Reason for Transfer

Date Time

Received By

Date Time

Relinquished By

Extracts Transferred

2

20.0

20.02

20.0

20.0

20.0

20.0

20.0 20.0

20.0

2.0

1.0 1.0

10 10 10

AFTIN-EXP-R1-FB

IN/OUT-EXP/SV-SB-ACE AFTOUT-EXP/SV-R1-FB

020 0

900

026 0

9602L963-

COE-HOT GAS

9602L916-

AFTIN-EXP-R1MS-FB COE-HOT GAS

AFTOUT-EXPLSV-R2-FB

WESTON®

LC - GC - GC/MS EXTRACTABLES

yst: _	= Myen	lest: _	Ý 33C							ACN AAPrep:
	RFW # (ML)	Mtrx	рН	Initial Wt/Vol	Surr Mult		Final Vol (mL)	Split Mult	GPC Y/N	Acid Fraction or Pest/PCB or LC (Date/Time/Initials)
	Block (771)	w		170	يستنز	بهؤونسلم	HL10	2	N	
	Blink Soike (70)			1	1	سرمنز		1-1-		End time:
	031916- cof (580)	1 1 1		1	<u> </u>				┨-\-	BN Fraction (Date/Time/Initials)
 	- 009 (330)			1	11			1-	+	Start time: A/A
!	- c13*(400)			i				1		End ditte:
1	018(310)			i	<u> </u>		<u> </u>	 	1 -	
!									1/	Extraction Information (Date/Analyst)
								1-	/ _	
 										Filtration:
!						<u> </u>	1/	4_	<u> </u>	Boildown:
!						<u> </u>	<u> </u>			Blowdown:
1			-							GPC Cleanup:
1					1/	1				GPC #:
1				3470	1_		<u> </u>			After GPC Boildown:
1			1	-		<u> </u>				After GPC Blowdown:
1				1					_	Acid/Florisil/Alumina Cleanup:
ı			7,							- 1/ N/A
1		1/	1				ļ			Prep Sheet: Alay 2/8
) 1		<u>X</u>				<u> </u>				GPC Lab ID #:
1									-	Florisil Lot #:
1		•					<u> </u>		_	Florisil Lab ID #:
2			ļ	<u> </u>					-	
3 i				<u> </u>						* For Surr/Spike Mult, refer to Table 1 / 2 / 3 (circle one)
4!/	,									Table 1/2/3 (clicie one

age #

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WESTON®

LC - GC - GC/MS EXTRACTABLES

2/2/64					,,	1104	(/)		Logbook # 5055
extract Date: 217 96		Extra	ction Ba	tch #:	: <u>- 16</u>	$u\varphi_l$	4	_ SD	G File Y/N:
nalyst: Shukl	Test:	2333 0	Me	thod:	<u> 500°</u>		Solver	nt:	AAPrep:
RFW #	Mtrx	pН	initial Wt/Vol (g/mL)	Surr Mult	Spike Mult	Final Vol (mL)	Split Mult	GPC Y/N	Acid Fraction or Pest/PCB or LC (Date/Time/Initials)
1 9602L916-021	Air			10		100	ಎ	N	Start time:
21 027				1			1		End time:
3: 024				Ш_			-		BN Fraction (Date/Time/Initials)
026				 	ļ				Start time:
5 Plank					1 -			\ \	End time:
6 85	A			W_	10	₩	1	Ψ	Extraction Information
**	-			-			 	-	Extraction Information (Date/Analyst)
91	-			 				ļ	Filtration:
10							 		Boildown:
11 1	-			+	-				Blowdown:
12 1	-			1	1				GPC Ready:
13 (GPC Cleanup:
14 1							 		GPC #:
15 i	-								After GPC Boildown:
16 :									After GPC Blowdown:
17									Acid/Florisil/Alumina Cleanup:
18	10								
19									Prep Sheet 1 20 96
20	42							<u> </u>	GPC Lab ID #:
21 1				<u> </u>			<u> </u>	ļ	Florisii Lot #:
22 1	<u> </u>			<u> </u>	ļ				Florisil Lab ID #:
23:	1			<u> </u>	ļ		ļ.,		* For Surr/Spike Mult, refer to
24		inter te					<u> </u>		Table 1/2/3 (circle one)
OMMENTS: Composite XA	n∩ +C	ا معلل	لأن	£.	_	ما	อ	oa.	1 Con Contactor
original sample	10.	18	175	T SCION	С. р .	IMM	لامن	NI N	1. ZV (UC JU
13.14	196		411	U	·		·		
	196								
	4 ** -								
1170gate: 40 L 41020716	1,20AB	@ 10x0 49/	Spik	e: 1.2	5ml (161129	B	ুৱা.	//
is Page Reviewed By/Date:	/ //	واج مد	4.			st LIMS E	V -		/(Y)21.1c.
• • • • • • • • • • • • • • • • • • • •	1/	Y			J		. , , <i></i>	9	

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WESTON⊗

LC - GC - GC/MS EXTRACTABLES

 	dac	Evtra	tion Batch	#: <u> </u>	uce 15	<u> </u>	SDG	E File Y/N:ACN_ AAPrep:Acid Fraction or Pest/PCB
ract Date:	146 Test	- 3330	Metho	xd:29	OE	Solven	i:	ACN AAPrep:
alyst:	Vota Mox	1 1		furr Spike Mult Mult		Mult	Y/N	or LC (Date/Time/Initials)
	(mL)		(120)	1	10	3	2	Start time: ν/Δ End time:
1 Glank	(720)			1	1-1-	4-1-		BN Fraction (Date/Time/Initials
2 Block Sale	(550)							Start time:
3: 96021963 -	-aug (539)				44		╀╌	End time:
	014 (200)						┼┼	
61	- 019 (30) - 024 (30)				++	++	++	Extraction Information (Date/Analyst)
81							+	Filtration:
91							+	Boildown:
10 :						+	-	Blowdown:
11 1					-	+	+-	GPC Ready:
12				+-+-	4		+-	GPC Cleanup:
13 1			1	Ycl.				GPC #:
14 (1.1	* 	_		一	After GPC Boildown:
15:			/طول	+			-	After GPC Blowdown:
16 :		1						Acid/Florisil/Alumina Cleanup:
17 :								
18 :		4-						Prep Sheet: 1046 2/8
19	1						_	GPC Lab ID #.
20								Florisil Lot #:
21 i						-+	一十	Florisii Lab ID #:
22								* For Surr/Spike Mult, ref
23								Table 1/2/3 (circle
24								
COMMENTS:	Sengles bus	of the	Viline	(770 pm	C,) n buch	·/ DI	H2 (c npoinde
								time (a stimbe) South was
×× 5.74	in 014 pech	ACR O	- 2= 15,au		nt fy	1 F	-, ے	inte time sprong.
- Only	وعالم والمعلماني							.:/
Surrogate:		1409	13/96	Spike:/	25 <u>ul</u> ed Agains	46:	129) //DATE:	3 Witness:
This Page Review	wed By/Date:	W-0"	1-11	<u> </u>	-			Page # - 450

act Date:	Mtrx	рН	Initial Wt/Vol	Surr Mult	Spike Mult	Final Vol	Split Mult	GPC	Acid Fraction or Pest/PCB
			(g/mL)		*	(mL)			Or <u>LC</u> (Date/Time/Initials)
96021963-027	Air			10		100	2	2	Start time:
029							-	l i -	BN Fraction (Date/Time/Initials)
031	11			Н-					Start time:
033	1-1-			┼┼╌		_		+	End time:
035	11			-++				++-	
Flink	++		<u> </u>	₩,	1:0	4	╀╌┼╌	1.1	Extraction Information
1 65	1 4			V.	<u>jo</u>	V	A	187	(Date/Analyst)
31				-				+	Filtration:
9;	-			-			-		Boildown:
				-				-	Blowdown:
21				-			-	+	GPC Ready:
31				-	-		 	+	GPC Cleanup:
4	-			+-				+	GPC #:
5.	-			+			+	+	After GPC Boildown:
5	┪			+	 		 	+	After GPC Blowdown:
7 1	\		-	-	-		\dagger	+	Acid/Florisil/Alumina Cleanup:
B :	+			+			+		<u> </u>
- 	+			+		-	+	+	Prep Sheet: 128/96
	$+\lambda$	h //	/r	+-		-	+-		GPC Lab ID #:
1 1	+/	1/2/2	1	+-			+		Florisil Lot #:
·	+-	X 48	46	+	+		+	+-	Florisii Lab ID #:
3 1		 \ 		+		1	+	+	* For Surr/Spike Mult, refer to
4 !		 \		+	 	 	+-		Table 1/2/3 (circle one)
<u> </u>			<u> </u>	Ш	1	<u> </u>	<u>.l</u>	<u>. </u>	
ON 1430 JOH OFF 0840 249	16	imposi	tes						

WESTON® LC - GC - GC/MS EXTRACTABLES Logbook #: 5055 Extract Date: 2/8/94 Extraction Batch #: 96UC\$17 SDG File Y/N: Analyst: 6- hot nucleur Test: 08330 Method: KD Solvent: AUN AAPrep: 2/8/96 Split GPC Final initial Surr Spike Acid Fraction or Pest/PCB Mult Vol Mult Mult Wt/Vol Mtrx рΗ RFW # or LC (Date/Time/Initials) (mL) (g/mL) W Start time:___ 10 96022 916-006 370 Sdo End time:___ 210 2 i -020 BN Fraction (Date/Time/Initials) 240 3 ι -023 Start time: 220 41 - 025 End time:____ 240 96021963-026 210 6 Extraction Information 180 7 1 -030 (Date/Analyst) 235 8 i -032 Filtration: ___ 225 9 i -034 Boildown: 200 10 i Blowdown:____ 200 11 i Black spile GPC Ready: 12 i GPC Cleanup: 13 1 GPC #: ___ 14 i After GPC Boildown: ____ 15 ı After GPC Blowdown: ____ 16 i Acid/Florisil/Alumina Cleanup: 17 i 18 i Prep Sheet: 2/9/96 692-19 . GPC Lab ID #: _____ 20 i Florisil Lot #: ___ 21 1 Florisii Lab ID #: ___ 22 i * For Surr/Spike Mult, refer to 23 i Table 1/2/3 (circle one) COMMENTS: DOW/ACETONE SO.SD was for B + BS Surrogate: Soul 41024 10, 290NB _ Witness: Reviewed Against LIMS By/DATE:

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WESTON⊗

LC - GC - GC/MS EXTRACTABLES

		, ,											Logbook #: 3 / 5 8
Extrac	ct Date:	2/9/96		Ext	ractio	n Ba	tch #:	966	E	250	,9	_ SD	G File (YVN: 1/2/9)
Anaiy:	st:	Qu	Test:	0625	5H	Ме	thod:	Seo	<u>f.</u>		Solver	nt: <u>D</u> C	AAPrep: <u>D.O 2/9/</u>
		RFW #	Mtrx	pH	in yet	nai Vol mL)	Surr Mult	Spike Mult	F	inal Vol mL)	Split Mult	GPC Y/N	Acid Fraction or Pest/PCB or LC (Date/Time/Initials)
1	96021	916-004	w	34		A	2.5		2	.0	1,25	2	Start time:
2		-006			1	_					1		End time:
3 1		-009											BN Fraction (Date/Time/Initials)
4		-0 20					1		L		+		Start time:
5 :		-071					25		_		12,5		End time:
6		-022					1		L		_		
7	9602L	963-004					25		_		1,25		Extraction Information (Date/Analyst)
8		-009				↓_	1		_		1		l` ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '
9		-014					$\perp \perp$		Ц		1		Filtration: 2/9/96 Qu
10		-026				$oldsymbol{ol}}}}}}}}}}}}}}}}}$	1		Ц		1		Blowdown: 8/16/96 AMO
11		-027	\coprod			<u> </u>	25		Ц		12,5		Blowdown: 8/16/76 NVIC
12		-028	\coprod			 	25		Ц		1,25		GPC Ready:
13 :		-029	Ц_	$\bot \bot \downarrow$			25		Ц		125		GPC Cleanup:
14		-030	\coprod		<u> </u>	╀	2.5		Ц		1.25	1	GPC #:
15 1		-03		1	7/2/9		25		\coprod		12.5		After GPC Boildown:
16 1		lank	$\bot \bot$	70	70	20	2,5		Ц		1,25		After GPC Blowdown:
17		5	$\bot \bot$		4	\dashv	11	2,5	Ц				Acid/Florisil/Alumina Cleanup:
18		50	11		4		<u> </u>	ــــــــــــــــــــــــــــــــــــــ	د			1	Prep Sheet: AND 2/10/
19			1										GPC Lab ID #:
20:	•			11/2	// -		_					ļ	
21 1			A X	2919	4		-		L		ļ	<u> </u>	Florisii Lot #:
22	·						-		-			<u> </u>	Florisil Lab ID #:
23									L				* For Surr/Spike Mult, refer to
24	<u>e/</u>						<u> </u>				<u> </u>		Table 0 / 2 / 3 (circle one)
		4ml of e	x.†~c-	H 7 1:	لمصم		to a	800 a	. 1	-£	ŊΤ	H-0	in septunnel
COMM	Pour			prep			_						. 1 //
		and 100		<i>y</i> •		.,	1/	- ()				,	· · · · · · · · · · · · · · · · · · ·
	on	2/14/96 b	, h			•	•	Kuc					114/96.
		411140 2	<i>yU</i>	V. /	<u>a</u>	-(2)	WVX	i i i	· · · ·			ئــــــــــــــــــــــــــــــــــــــ	414/7.6
Surron	nata: 50	20ul 3/88 E	SU-	71A 3	3V750	Soil	ra: 50	and	7/	88 E	MS	33117	302@/00-300 -Vini
		ewed By/Date: A	_	G 4	300	, -w.		od Agair					m 2/16/90
	g · · ·			7, 7				 -			-,, =,,,,	- /*	1

RFW 21-21-019/Z-11/93

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WESTON®	W	FS1	COI	Nø
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LC - GC - GC/MS EXTRACTABLES

STON®			: - GC/						Logbook #: 5/58
2/14/96		Extra	action Bat	tch #: .	96L	E 02	36	SD	G File (N)N: Ama a 14 M AAPrep: (M) AAPrep
ict Date:	Test:	0625 H	Me	thod:	511		Solver	t: <u>Da</u>	M AAPrep: M/M/0 λ/15/
yst: <u>////</u>			initial		Spike	Final	Spirt	GPU	Acid Fraction or Pest/PCB
RFW #	Mtrx	рН	Wt/Vol (g/mL)	Mult 0.24	Mult	Vol (mL)	Mult	Y/N	or LC (Date/Time/Initials)
10/42/01/01/3	TW	NA	N/A	7		2.0	1.25	N	Start time:
9602 1916-013	竹	11	1	215			1.25	1	End time:
024	17			25			12.5		BN Fraction (Date/Time/Initials) Start time:
026	111			25			12,5		II.
023	11/			2.5			1,25		End time:
1	+/			2.5			1.25		
1 025	╅╫╼	 					1.25		Extraction information
963-019	+	 		╂╂			1, 25	1	(Date/Analyst)
-024	11	 	+	╀┼┼		 	1.25		Filtration: 4/19/96 11 1
- 032	$\perp \! \! \! \! \! \! \! \perp \! \! \! \! \! \! \! \! \! \! \!$	\		*			_	+ +	Boildown: 2/14/96 DW
-033		/		125		-	/2.5	 	Blowdown: 2/15/96 D. O.
- 034	$\perp V$			2.5			1,25	+-+	GPC Ready:
- 035	$\top I$			25			/2.5	+	GPC Cleanup:
31 Blank				2,5			1. 25	1	GPC #:
B3	11				1.02	5	1,25	1-1	
51 L BSD	11/	1	1	14	1.0	451	1,2	1 1	After GPC Boildown:
	 			+	*	D.O. 24	14/96		After GPC Blowdown:
61	10.0			1					Acid/Florisil/Alumina Cleanup:
71	1211	4196	-	+			1		- A a well
81		_	+-+	+-		1	1		Prep Sheet: D.O. 2/15/96
19 i			1-14	4	-	╅	+	+-	GPC Lab ID #:
20 i		1-9	12/	4-	-	-	+-	+-	Florisil Lot #:
21 :	10	100	1		ļ	-			Florisii Lab ID #:
221	V	<u> </u>			ļ				
231									* For Surr/Spike Mult, refer to
241				_	1	1			1300 / 2/3 (0.00 0.0
		1 16 1	m12/1/9	6		4.		1	1. 1
PH &	Lh	il H	Volume	_ Wa	2 0	w1	app	11 cel	in according to
OMMENTS:		m1	2/14	1/56		Sai	uple	<u> </u>	are ar therefo
<u> </u>	1 4	it. V	01	not	nee	ded	. D	٠0	2/14/96
* Sus. and spik	2 U	e et be	ios che					15 SU	104 calculations per S
	e m	wyo		- 6					
33117501		<u> </u>			Pal II	CIII-	9	2717	1247 () () () () () ()
urrogata: 500 MEM	, A./	سداده لم	/1151uV -	`~!! [¬]	ונן טע		ω .	י יוככ	William Town



END OF DATA PACKAGE

Roy F. Weston, Inc. - Lionville Laboratory BNA ANALYTICAL DATA PACKAGE FOR COE-HOT GAS

DATE RECEIVED: 02/07/96	RFW LOT #	:9602L963
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CLIENT ID	RFW	# MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
					/ /	
AFTOUT-EXPLSV-R2COMP	004	AI	96LE0209	02/02/96	02/09/96	02/11/96
AFTOUT-EXPLSV-R3COND	009	IA		02/04/96	02/09/96	02/11/96
AFTOUT-EXPLSV-BTCOND	014	AI	96LE0209	02/04/96	02/09/96	02/11/96
AFTIN-EXP-R2-COND	019	AI	96LE0236	02/02/96	02/14/96	02/20/96
AFTIN-EXP-R3-COND	024	IA	96LE0236	02/04/96	02/14/96	02/20/96
AFTOUT-EXPLSV-R2-FB	026	. AI	96LE0209	02/02/96	02/09/96	02/13/96
AFTOUT-EXPLSV-R2-FX	027	IA	96LE0209	02/02/96	02/09/96	02/13/96
AFTOUT-EXPLSV-R3-FB	028	IA	96LE0209	02/04/96	02/09/96	02/13/96
AFTOUT-EXPLSV-R3-FX	029	IA	96LE0209	02/04/96	02/09/96	02/13/96
AFTOUT-EXPLSV-BT-FB	030	IA		02/04/96	02/09/96	02/13/96
AFTOUT-EXPLSV-BT-FX	031	AI	96LE0209	02/04/96	02/09/96	02/13/96
AFTIN-EXP-R2-FB	032	IA	96LE0236	02/02/96	02/14/96	02/17/96
AFTIN-EXP-R2-FX	033	AI	96LE0236	02/02/96	02/14/96	02/19/96
AFTIN-EXP-R3-FB	034	AI	96LE0236	02/04/96	02/14/96	02/19/96
AFTIN-EXP-R3-FX	035	AI	96LE0236	02/04/96	02/14/96	02/19/96
LAB QC:						
SBLKSO	MB1	AI	96LE0209	N/A	02/09/96	02/11/96
SBLKSO	MB1	BS AI	96LE0209	N/A	02/09/96	02/11/96
SBLKSO	MB1	BSD AI	96LE0209	N/A	02/09/96	02/11/96
SBLKSX	MB1	AI	96LE0236	N/A	02/14/96	02/17/96
SBLKSX	MB1	BS AI	96LE0236	N/A	02/14/96	02/17/96
SBLKSX	MB1	BSD AI	96LE0236	N/A	02/14/96	02/17/96

Oxform CC/

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CHAIN OF CUSTODY

200 381-596a Sample Y or N COC Tape was:

1) Present on Ouler
Package Y or (N) Package Y or N 2) Unbroken on Quitor 3) Present on Sayrpte N) io × COC Record Present Upon Sample, Rec't よく 4) Unbroken on **WESTON Analytics Use Only** ** 2 かがかられるか 0 2(Ambient or Chilled Properly Preserved 3) Received in Good 5) Hecen... Holding Times 5) Received Within Samples were 1) Shipped X or 4) Labels Indicate Hand Delivered Cooler# Airbill # WESTON Analytics Use Only Condition CN NORG Metal Analytics Use Only Custody Transfer Record/Lab Work Request 15/W/Cz Z 9.XX.03 Discrepancies Betweer Samples Labels and COC Record? Y br NOTES: FOR MEUSIONS 4.1ch12 Ref ととびら WE WAS and strong som 83301 5, and color 1.378 インでい 2015 фен ر د たれる PCB Pest ORGANIC Time 7 ^کِ ک CKARA LI 32 Date Liquid Solid Date Time Collected Liquid Solid 2 - 45+ 5 94 Received DATE/REVISIONS: چ #/Type Container COE-H6-MMON-EXEN-H2-HUM-3/2/ ANALYSES REQUESTED Refrigerator # CONDAM Preservatives Volume DE-146-MATON-ENACHES-XMD 1-TWB Mairix 1373 Relinquished by Chose (*) MS MSD 1901 007 COF-IN-POPTOT-EXPINATES O CDE-ING-PROCEREDAY L372 RDX IMX LITY L-DWI 08-146 APPEN - 19XXVV-- The MARCON ENDIN-OF 46 APPROX - PS/VIV. K-116 MOTON EXPLY-E HE MINDE - ENTO-04:01/28/1/6 Time K-HO-MMOTICINE FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS Cilent ID/Description Date Due TEK ~ √/0-Date JEDZARR JEDZARR OWLE Client COK-HOT 6 AS Lockar Received by Est. Final Proj. Sampling Date Work Order # DAD 81 Project Contact/Phone WESTON Analytics Use Only AD Project Manager C Special Instructions: RFW 21-21-001/A-7/91 9 2 Date Rec'd Relinquished L EP/TCLP Leachate A - A. Da - Drum Solids W. Wipe X. Other F. Flah Account # DL . Drum MATRIX CODE8:

900 381-596a EVENTO19 it an Sample 2) Unbroken on Outer z Present 1) Present on Outer Package Y or N pon Sample Rec'l 5 OC Record **WESTON Analytics Use Only** Sample Page ∹ ent or Chilled 5) Received Wilhin 3) Received in go. Condition Properly Preservey ō ≻ Hand Delivered Samples were: Cooler# 1) Shipped Holding Times **WESTON Analytics Use Only** 2) Amble Airpil * СИ INORG E19.024 Discrepancies Between Samples Labels and COC Record? Y or I NOTES: Hei# 12 C 120 M 70 100 BTFO U62 5400 AHERY) L378 o an sout Germus is theth PCB Pest/ ORGANIC Time ANS Totos Canulled Date AOV Date Time Collected Collected Liquid Liquid Solid 20,2 Received by DATE/REVISIONS: #/Type Container The are matrix son all soupy ANALYSES REQUESTED Refrigerator # Preservatives Canno をある。 Volume Matrix Relinquished by Matrix QC Chosen MS MSD 2,4-DWT; 1,6-DWT; 1201 * RDX; HMX; tetry/; (JE-145 MM) JA-157/3/-300 CUE-HO AFTION - FINIS-1540 Time FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS ETH- MA ON - EX Client ID/Description Est. Final Proj. Sampling Date
Work Order # 1022331 - 012 - 1 CDE-146-19FTO-7--Date 1,3-DNB: Project Contact/Phone Date Due TAT 7,4.6- TNUT apr 190 COF - HOT WESTON Analytics Use Only RFW 21-21-001/A-7/91 Relinquished 2005 8 Soil SE Sediment 80 Soild SL Sludge W - Water Leachate Date Rec'd W. Wipe X. Other F. Fish Account # DL - Drum Cilent MATRIX CODEB: . 8 . 8 نـ ဗွ

381 · 596a int on Sample Unbroken on Outer COCMecord Present z Package Y or N Package Y or N Upor Sample Rec'l COC Tape was: 1) Present on Outer 3 Unbroken on **WESTON Analytics Use Only** 8¢15 2) Ambigay of Chilled 3) Recovered In Good 5) Received Within ŏ ≻ 1) Shipped ___ or Hand Delivered _ Holding Times Samples were: Cooler# **WESTON Analytics Use Only** urbill # CN Metal Custody Transfer Record/Lab Work Request 2330 LOS Discrepancies Between Samples Labels and COC Record? You'N NOTES: ₩3330* chart rus Ref# xur 3.5 X 4 X 1378 40 12) [L Herb SOG Lest Time ORGAN ट्रन्ड لمجادب L377 AN8 ر د د ELA BOIS Date AOV 30 Liquid Liquid Date Time Collected Collected Explusion Sami Jacob 1375 Received by #/Type Container DATE/REVISIONS: ANALYSES REQUESTED Ž 4 COE 116 - APTIM - EXP- 1/3 - CONDAM Refrigerator # Preservatives Volume Matrix L373 Relinquished by Metrix OC Chosen ISM SM 2 Est. Final Proj. Sampling Date | CI2-012-1200 | Work Order # | 02281- | CI2-012-1200 L372 doe-Ho-Pretim-En VE-146-PMTW-6XP-CLE-160 - PATING ENA 96-16-197-197-DE-HO-METIW-EXP * RDX; HMX; tetry 15 2,4,-DMT; 2,6-DNTS NB; 1,3-DNB; 1,3,5 DE-ING-MATTIN-EX 1540 Time FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS Client ID/Description 100/16 6963 Baken Date Date Due TAT Dulant Received by 2,4,6-TWT Project Contact/Phone WESTON Analytics Use Only Clent COE-HO 3 AD Project Meneger --Special Instructions: 90 RFW 21-21-001/A-7/91 Relinquished Leachet 04 × % Se - Soli Se - Soliment Se - Soliment Se - Solide W - Water O - Ol A - Ar B - Oum Solide Solide Date Rec'd X - Wps X - Other F - Flah Account # DL - Ord MATRIX CODEB:

800 381 596a 2) Unbroken on Outer Package Y or N z COC Record Present COC Tape was:
1) Present on Outer
Package Y or N WASSERY Hec't ₹ **WESTON Analytics Use Only** pon Sømpj Page **→ 3/** ← **ए** z 2) Ambient or Chilled è ved Within 4) Labers Indicate Properly Preserve Samples were:

1) Shipped or
Hand Delivered 3) Receined Condition **WESTON Analytics Use Only** Airbil} CN NORG Metal Stanuas 6700 **Custody Transfer Record/Lab Work Request** 2 pg 16 1 Laska le Ltoolg, 624,032,033,0341635 z Discrepancies Between Samples Labels and COC Record? Y or I NOTES: Rei# (EDS L378 фэн 2/14/963- AIIIMatzux = H PCB Pest/ ORGANIC Time 45090 L377 AN8 2 pay guantong 2 Date AOV Date Time Collected Collected Liquid Solid Ples Seld ग्रामाध L375 Received by 190e 8/2/KG #/Type Container ANALYSES REQUESTED Preservatives /ohume Matrix L373 Relinquished by AFTOUT-EXPISY-SEPTEM BI Metrix OC Chosen (7) MS MSD APPOUT EXPISY-R2-FB 34 AFTIN-EXP-R3-FA

SELD PERSONNEL: COMPLETE ONLY SHADED AREAS AFTOUT-EXPISA-RA-H) AFTD UT-EXPISY-R3-FB L372 FB=FHS+1BHS(Imposite AFTOUT-EXPISU-23-EXP-RO-H 23 AFTIN-FXP-BD-FX はの一日によく出して Time Cilent ID/Description Date Date Due TAT 子に上 Received Est. Final Proft, Sampling Date WESTON Analytics Use Only Project ContactiPhone Special Instructions: RFW 21-21-001/A-7/91 AD Project Mahe Relinquished 8 - Soil SE - Sediment SO - Soild SL - Sludge W - Water A - Ar DS - Drum Liquids EP/TCLP Leachate Work Order # Date Rec'd Solids DL • Orum WI - Wipe X - Other F - Fish Account # MATRIX CODES: نـ ဗ္ဗ

	WESTON® Sample Discrepancy Report (SDR) SDR #: 407500
)	Initiator: Teb Feick RFW Batch: 9603(916, 963 Parameter: 055H Date: a/14/96 Samples: see below Matrix: Or water Client: CDE-Hot Gas Method: SWB46/MCAWW/CLP/ Prep Batch: 950E0309
	1. Reason for SDR a. COC Discrepancy Tech Profile Error Client Request Sampler Error on C-O-C Transcription Error Wrong Test Code Other Discrepancy Missing Sample/Extract Container Broken Wrong Sample Pulled Label ID's Illegible Hold Time Exceeded Insufficient Sample Preservation Wrong Received Past Hold Improper Bottle Type Not Amenable to Analysis Note: Verified by [Log-In] or [Prep Group] (circle)signature/date: c. QC Problem (Include all relevant specific results; attach data if necessary) FYI - duct to mutual extraction is HPLC with Affine Unit to mutual extraction is HPLC with Affine Unit all Cuton to the following plane is 9600 (916 - 004, 009, 001, 000; 000) NODE
)	3. Discussion and Proposed Action — Re-log — Entire Batch — Following Samples: — Re-leach — Re-extract — Re-digest — Revise EDD — Change Test Code to — Place On/Take Off Hold (circle) Other Description: Other Description: Other Description: Other Description: Other Description: Other Description: Other Description: Other Description: Other Description: Other Description: Other Description: Other Description: Other Description: Other Description: Other Description: Other Description: Other Description: Other Description: Other Description:
	4. Project Manager Instructionssignature/date: X Concur with Proposed Action Disagree with Proposed Action; See Instruction Include in Case Narrative Client Contacted: Date/Perso:: Add Cancel 5. Final Actionsignature/date: Verified re-[log][leach][extract][digest][analysis] (circle) Included in Case Narrative Hard Copy COC Revised Electronic COC Revised Electronic COC Revised EDD Corrections Completed Actionsignature/date: Action Mean Action Demonstrative Action Mean Action Demonstrati
)	Electronic COC Revised EDD Corrections Completed When Final Action has been recorded, forward original to QA Specialist for distribution and filing. Route Distribution of Completed SDR X Initiator X Lab Manager: J. Michael Taylor X Project Mgr: X Project Mgr: X Project Mgr: X Project Mgr: X Section Mgr: Siery/Durke/Daniels X Section Mgr: Dianne Therry X QA File: Feldman/Racioppi/Shaffer X Data Reporting: Som Basuthakur Sample Prep: Osei-Mensar/Swisher EDD Corrections Completed SDR Route Distribution of Completed SDR Metals: Reichner/Doughty Inorganic: Perrone/Leonards GC/LC: Jarvis/Skrzat/Schnell MS: LeMin/McIntyre/Taylor/Kasdras/Steele Log-in: Geiger EDD: Miller Admin: Brewer/Keehn/Edgington Other:

MESTOIA: Samble Disci	charich richorr	JD11)	SDH #.	-101101.010
1/ Raline	RFW Batch:960215		Parameter:	SUJA
Initiator: $9-9-96$	Samples: See b	elow	Matrix:	FIR
Client: COF HOT GAS		MCAWW 'CLP	Prep Batch:	
1 Reason for SDR		Co.	mpler Error on (2-O-C
Tech Pro	ofile Error Client Restantion Error Wrong T			
b. General Discrepancy Missing Sample/Extract Hold Time Exceeded Improper Bottle Type Verified by [Log-In] or [Prep Group]	Container Broken nsufficient Sample Not Amenable to Analysi (circle)signature/date:	Wrong San Preservatio s		_ Label ID's Illegible _ Received Past Hold
c. QC Problem (Include all relevan	t specific results; attach	data if necessary)		
Add 0625	to the follows	ng samples	•	
9602 4916	- 13, 18, 23, 24, 3	25,24		
96021963	3-19, 24, 32, 3	3, 34, 35		·
2. Known or Probable Causes(s)				
			1 =	
3. Discussion and Proposed Action Re-log Entire Batch Following Samples: Re-leach Re-extract Re-digest Revise EDD Change Test Code to Place On/Take Off Hold (circle	<u>bure</u>	iption.		
4. Project Manager Instructionssig		2/9/96		
Concur with Proposed Action Disagree with Proposed Action Include in Case Narrative Client Contacted: Date/Person	n; See Instruction			·
5. Final Actionsignature/date: Verified re-[log][leach][extract] Included in Case Narrative Hard Copy COC Revised Electronic COC Revised EDD Corrections Completed	digest] ahalysis] (circle			
When Final Action has been record				
Route Distribution of Completed SI X Initiator		Metals:	of <u>Completed</u> Reichner/Doug	phty
X Lab Manager: J. Michae X Project Mgr:	l Taylor		nic: Perrone/Led :: Jarvis/Skrzat/	
X Section Mgr: Siery/Durk		MS: Le	Min/McIntyre/T	aylor/Kasdras/Steele
X QA Section Mgr: Dianne X QA File: Feldman/Racion	e i nerry opi/Shaffer	EDD: N		
X Data Reporting: Som Ba Sample Prep: Osei-Mensa	asuthakur	Admin:	Brewer/Keehn,	/Edgington

WESTON Sample Discrep	ancy Report (SD	H) SDR #	ini outo
	FW Batch: 9602L916		er: #L
14 61	amples: AU	IVIALITIX.	AIK
Client: AARP Hotigs N	lethod: <u>SW846, MCAV</u>	w·clp Prep Ba	tch:
b. General Discrepancy Missing Sample/Extract Col Hold Time Exceeded Insi Improper Bottle Type Not Note Verified by [Log-In] or [Prep Group] (cit c. QC Problem (Include all relevant st	ntainer Broken ufficient Sample Amenable to Analysis cle)signature/date: Decific results; attach data	Wrong Sample Pulled Preservation Wrong a if necessary)	Label ID's Illegible Received Past Hold
2. Known or Probable Causes(s)		; ÷	
3. Discussion and Proposed Action	Other Description	on:	
3. Discussion and Proposed Action Re-log			in a series of metric
Entire Batch Following Samples:	x change	matrix where a	ppropriace
Re-leach		to air.	
Re-extract Re-digest			
Revise EDD Change Test Code to			
Place On/Take Off Hold (circle)			
4. Project Manager Instructionssigna	ture/date: Lbalen	2/14/16	
Concur with Proposed Action Disagree with Proposed Action;	See Instruction	•	
Include in Case Narrative			
Client Contacted: Date/Person			
Add Cancel			
	Whl 2 15/40 gest][analysis] (circle)	Other Explanation:	
When Final Action has been records	d, forward original to Q	A Specialist for distributi	on and filing.
Route Distribution of Completed SDR X Initiator	Rou	te Distribution of <u>Comp</u> Metals: Reichner, Inorganic: Perron	leted SDR /Doughty
X Lab Manager: J. Michael T X Project Mgr:		GC/LC: Jarvis/S	krzat/Schnell
X Section Mgr: Siery/Durke,		MS: LeMin/McInt Log-in: Geiger	tyre/Taylor/Kasdras/Steele
X QA Section Mgr: Dianne T X QA File: Feldman/Raciopp	/Shaffer	EDD: Miller	
X Data Reporting: Som Basi	thakur	Admin: Brewer/K	leehn/Edgington



DATA SUMMARY

Lionville Laboratory Roy F. Weston, Inc.

Work Order: 02281012012 Page: 1a Semivolatiles by GC/MS, HSL List Client: COE-HOT GAS

RFW Batch Number: 9602L963

est ciu

Report Date: 02/20/96 15:31

RFW Batch Number: 9602L963	Client: COR	COR-HOT GAS	WOrk	Order: 0228101	ZUIZ Paqe: I	, rol
	>	`	`			>
Cust ID:	AFTOUT-EXPLS	AFTOUT-EXPLS	AFTOUT-EXPLS	AFTIN-EXP-R2	AFTIN-EXP-R3	AFTOUT-EXPLS
	V-R2COMP	V-R3COND	V-BICOND	-COND	-COND	V-R2-FB
Sample RFW#:	004	600	014	010	024	026
ation Ma	AIR	AIR	AIR	AIR	AIR	AIR
	2.50	2.50	2.50	12.5	12.5	2.50
Units:	total ug	total ug	total ug	total ug	total ug	total ug
Nitrobenzene-d5	8 49	65	61 %	61 %	63 %	74 %
Surrogate 2-Fluorobiphenyl	\$	62	72 \$	55	51 %	99
	83	91 %	81 %	83 &	67 %	94 %
	55	2 0 2	52	53 %	49	مد 99
2-Fluorophenol	80 *	4 69	72 %	. 104 %	106	82 %
2,4,6-Tribromophenol	84 %	82 *	75 %	48 %	49 %	71 %
		11 30	75 11	120 11	120 11	25 U
Fig. (2-Chloroethyl) ether	25 U	25 U	25 U	120 U	120 U	25 U
2-Chlorophenol	25 U	25 U	25 U	120 U	120 U	25 U
1.3-Dichlorobenzene	_ 25 U	25 U	25 U	120 U	120 U	25 U
1.4-Dichlorobenzene	_ 25 U	25 U	25 U	120 U	120 U	25 U
Benzyl alcohol	_ 25 U	25 U	25 U	120 U	120 U	25 U
1,2-Dichlorobenzene	25 U	25 U	25 U	120 U	120 U	25 U
2-Methylphenol	_ 25 U	25 U	25 U	120 U	120 U	25 U
bis (2-Chloroisopropyl) ether	_ 25 U	25 U	25 U	120 U	120 U	25 U
4-Methylphenol	_ 25 U	25 U	25 U	120 U	120 U	
N-Nitrogo-Di-n-propylamine	25 U	25 U	25 U	120 U	120 U	25 U
Hexachloroethane	25 U	25 U	25 U	120 U	120 U	
Nitrobenzene	25 U	25 U	25 U	120 U	120 U	
Isophorone	25 U	25 U	25 U	120 U	120 U	
2-Nitrophenol	_ 25 U	25 U	25 U	120 U	120 U	
2,4-Dimethylphenol	25 U	25 U	25 U	120 U	120 U	25 U
Benzoic acid	120 U	120 U	120 U	620 U	620 U	120 U
bis (2-Chloroethoxy) methane	25 U	25 U	25 U	120 U	120 U	. 25 U
2,4-Dichlorophenol	_ 25 U	25 U	25 U	120 U	120 U	
1,2,4-Trichlorobenzene	25 U	25 U	25 U	120 U	120 U	25 U
Naphthalene	25 U	25 U	25 U	120 U	120 U	25 U
4-Chloroaniline	_ 25 U	25 U	25 U	120 U	120 U	25 U
Hexachlorobutadiene	25_U	25 U	25 U	120 U	120 U	25 U
4-Chloro-3-methylphenol	25 U	25 U	25 U	120 U	120 U	25 U
2-Methylnaphthalene	25 U	25 U	25 U	120 U	120 U	25 U
Hexachlorocyclopentadiene	25 U	25 U	25 U	120 U	120 U	25 U
*= Outside of EPA CLP QC limits.						

RFW Batch Number: 96021963 Cu	Cust ID: A	Client: COE-HOT ID: AFTOUT-EXPLS	AFTOU	Work Order: AFTOUT-EXPLS A	r: 02281012012 AFTIN-EXP-R2	AFTIN-EXP-R3	AFTOUT-EXPLS	
	:	V-R2COMP	V-R3COND	V-BTCOND	-COND	-COND	V-R2-FB	
	RFW#:	2 /	600	41/	019	024	026 7	
2,4,6-Trichlorophenol		25 U	25 U	25 U	120 U	120 U	25 U	
2,4,5-Trichlorophenol		120 U	120 U	120 U	620 U	620 U	120 U	
2-Chloronaphthalene		25 U	25 U	25 U	120 U	120 U	25 U	
2-Nitroaniline		120 U	120 U	120 U	620 U	620 U	120 U	
Dimethylphthalate		25 U	25 U	25 U	120 U	120 U		
Acenaphthylene		25 U	25 U	25 U	120 U	120 U	25 U	
2,6-Dinitrotoluene		25 U	. 25 U	25 U	120 U	120 U	25 U	
3-Nitroaniline		120 U	120 U	120 U	620 U	620 U	120 U	
Acenaphthene		. 25 U	25 U	25 U	120 U	120 U	25 U	
2,4-Dinitrophenol		120 U	120 U	120 U	620 U	620 U	120 U	
4-Nitrophenol .		120 U	120 U	120 U	620 U	620 U	120 U	
Dibenzofuran		25 U	1 25 U	25 U	120 U	120 U	25 U	
2,4-Dinitrotoluene		25 U	1 25 U	25 U	120 U	120 U	25 U	
Diethylphthalate		25 U	1 25 U	25 U	120 U	120 U	25 U	
4-Chlorophenyl-phenylether		25 U	r 25 U	25 U	120 U	120 U	25 U	
Fluorene		25 U	, 25 U	25 U	120 U	120 U	25 U	
4-Nitroaniline		120 C	I 120 U	120 U	620 U	620 U	120 U	
4,6-Dinitro-2-methylphenol		120 C	J 120 U	120 U	620 U	620 U	120 U	
N-Nitrosodiphenylamine (1)		25 L	J 25 U	25 U	120 U	120 U	25 U	
4-Bromophenyl-phenylether		25 [7 25 U	25 U	120 U	120 U	25 U	
Hexachlorobenzene		25 (J 25 U	25 U	120 U	120 U	25 U	
Pentachlorophenol			JB 120 U		620 U			
Phenanthrene		25 1	J 25 U	25 U	120 U	120 U	25 U	
Anthracene		25 1	J 25 U	25 U	120 U	120 U		
Di-n-Butylphthalate		25 [J 25 U	25 U	120 U	120 U	25 U	
Fluoranthene		25 (J 25 U	25 U	120 U	120 U	25 U	
Pyrene		25 1	J 25 U	. 25 U	120 U	120 U	25 · U	
Butylbenzylphthalate		25	J 25 U	. 25 U	120 U	120 U	25 U	
3, 3' - Dichlorobenzidine		20 1	J 50 U	. 50 U	250 U	250 U	20 U	
Benzo (a) anthracene		25 1		25 U	120 U	120 U	3 J	
Chrysene		25	J 25 U	25 U	120 U	120 U	2 J	
bis (2-Ethylhexyl) phthalate		25 1		JB 25 U	120 U	120 U	11 JB	
Di-n-Octyl phthalate		25	U 25 U		120 U	2	2 J	
Benzo(b)fluoranthene		25	u 25 u	7 25 U	120 U	2	25 U	
Benzo(k)fluoranthene		25	U 25 U	1 25 U	120 U	120 U	25 U	
Benzo (a) pyrene		25	u 25 u	1 25 U	120 U	120 U		
Indeno (1, 2, 3-cd) pyrene		25	U 25 U	I 25 U	120 U	120 U	25 U	
Dibenzo (a, h) anthracene		25		I 25 U	120 U	120 U	25. U	
Benzo(g,h,i)perylene		25	U 25 U	7 25 U	120 U			
İ		25		25	120 U	120 U	25 U	
(1) - Cannot be separated		from Diphenylamine.	*= Outside of	EPA CLP QC 1	imits.			
			((

fonville Laboratory Roy F. Weston, Inc.

Semivolatiles by GC/MS, HSL List

Work Order: 02281012012 Page: Client: COR-HOT GAS

RFW Batch Number: 9602L963

AFTOUT-EXPLS AFTIN-EXP-R2 2.50 total ug 032 AIR -FB 25.0 V-BT-FX total ug 031 AIR Cust ID: AFTOUT-EXPLS AFTOUT-EXPLS AFTOUT-EXPLS 2.50 V-BT-FB total ug 030 AIR 25.0 V-R3-FX total ug 029 AIR 2.50 total ug V-R3-FB 028 AIR 25.0 V-R2-FX total ug 027 AIR Matrix: Units: RFW#: D.F.: Sample Information

	Nitrobenzene-d5	92	مد	73	مد	06	٠.		عد	93	مد	70	
Surrogate	2-Fluorobiphenvl	16	مد		عد	74	عن	64	oje.	68	من	79	do
Recovery	p-Terphenyl-d14	164	مد	66	مد	101	من	93	من		من	105	- 40
•	Phenol-d5	75	مد		مد	77	مين	61	مد	73	₩		من
	2-Fluorophenol	95	من		مد		من		عن		مد	113	₩
2	2,4,6-Tribromophenol	73	e)o		مد		مد		مد		مد	9/	مد
			==[]=:	11 11 12 13 14 16 11	=£1===	11 11 11 11 11 11 11 11 11 11 11 11 11	=£1===		=£1====	11 11 11 11 11	=£1=====		=£1
Phenol		10	n	25	Þ	Ŋ	D	25	D	2	D		D
bis (2-Chloroethyl) ether	hyl) ether	ın	D	25	Ω	250	D	25	n	S	D		D
2-Chlorophenol		īŪ	n	25	Ω	S	D	25	Ω	2	n		ם
1,3-Dichlorobenzene	nzene	ın	n	25	n	250	D	25	Ω	S	Ω	25	D
1,4-Dichlorobenzene	nzene	250	Ω	25	Ω	S	D	25	Ω	250	n		D
Benzyl alcohol		'n	n	25	n	S	n	25	n	S	D		Ω
1,2-Dichlorobenzene	nzene	'n	Ω	25	n	S	n	25	D	5	Ω		D
2-Methylphenol		ъ	D	25	Ω	250	D	25	Ω	250	Ω		Þ
bis (2-Chloroisopropyl) ether	3opropyl)ether	10	ם	25	n	S	Ω	25	n	250	D		n
4-Methylphenol		LO	Þ	25	n	2	Ω	25	n	250	Ω		n
N-Nitroso-Di-n-propylamine	-propylamine	Ŋ	Þ	25	Ω	250	n	25	n	250	D		n
Hexachloroethane	ane	S	Ω	25	Ω	S	Ω	25	n	250	D		D
Nitrobenzene		Ŋ	D	25	Þ.		Ω		Ω	2	Ω		Ω
Isophorone		S	D	25	D	S	D		Ω	2	D		n
2-Nitrophenol		S	n	25	Ω	Ŋ	D		n	250	D		D
2,4-Dimethylphenol	nenol	5	n	25	n	S	Ω		Ω	2	Ω		Ω
Benzoic acid		0	Ω	120	Ω		Ω		D	0	Ω		Ď
bis (2-Chloroethoxy) methane	choxy) methane	S	Ω	25	Ω	5	D		Ω	2	D		D
2,4-Dichlorophenol	nenol	5	Ω	25	Ω	S	D		n	2	Ω		Þ
1,2,4-Trichlorobenzene	robenzene	S	Ω	25	Þ	ß	Þ		n	2	n		Þ
Naphthalene		S	D	25	D	2	Ω		Ω	S	Ω		n
4-Chloroaniline	ле	250	Ω	25	Þ		D		Ω	250	Ω		Ω
Hexachlorobutadiene	adiene	ທ	D	25	D	ហ៊	D		n	S	Ω		Þ
4-Chloro-3-methylphenol	thylphenol	ī	D	25	Þ	Ŋ	D		Ω	2	n		n
2-Methylnaphthalene	halene	250	n	25	n	250	D	25	Ω	250	n	25.	Ω
Hexachlorocyclopentadiene	lopentadiene	S	Ω	25	D		Ω		n	250	Ω		n
*= Outside of	*= Outside of EPA CLP QC limits.												

RFW Batch Number: 9602L963	Client: COK-HOT	- 1	Work Order	. 02281012012	Page: 2b		9
Cust ID:	AFTO	AFTOUT-EXPLS	AFTOUT-EXPLS	AFTOUT-EXPLS	AFTOUT-EXPLS	AFTIN-EXP-R2	Į
	¥->	V-R3-FB	V-K3-FX	N-BT-FB	V-BT-FX	-FB	0
RFW#:	027	28	620		Z (21	032	
2,4,6-Trichlorophenol	250 U	25 U	250 U	25 U	250 U	25 U	,
2,4,5-Trichlorophenol	1200 U	120 U	1200 U	120 U	1200 U	120 U	
2-Chloronaphthalene	250 U	25 U	250 U	25 U	250 U	25 U	
2-Nitroaniline	_ 1200 U	120 U	1200 U	120 U	1200 U	120 U	
Dimethylphthalate	250 U	25 U	250 U	25 U	250 U		
Acenaphthylene	250 U	25 U	250 U	25 U	250 U		
2,6-Dinitrotoluene	250 U	25 U	250 U	25 U	250 U	25 U	
3-Nitroaniline	1200 U	120 U	1200 U	120 U	1200 U	120 U	
Acenaphthene	250 U	25 U	250 U	25 U	250 U	25 U	
2,4-Dinitrophenol	1200 U	120 U	1200 U	120 U	1200 U	120 U	
4-Nitrophenol	1200 U	120 U	1200 U	120 U	1200 U	120 U	
Dibenzofuran	250 U	25 U	250 U	25 U	250 U	25 U	
2,4-Dinitrotoluene	250 U	25 U	250 U	25 U	250 U	25 U	
Diethylphthalate	34 0	25 U	250 U	25 U	250 U	25 U	
4-Chlorophenyl-phenylether	250 U	25 U	250 U	25 U	250 U		
Fluorene	250 U	25 U	250 U	25 U	250 U	25 U	
4-Nitroaniline	1200 U	120 U	1200 U	120 U	1200 U	120 U	
4,6-Dinitro-2-methylphenol	1200 U	120 U	1200 U	120 U	1200 U	120 U	
N-Nitrosodiphenylamine (1)	250 U	25 U	250 U	25 U	250 U	LO	
4-Bromophenyl-phenylether	250 U	25 U	250 U	25 U	250 U		
Hexachlorobenzene	250 U	25 U	250 U	25 U	250 U	25 U	
Pentachlorophenol	1200 U	120 U	1200 U	120 U	1200 U		
Phenanthrene	250 U	25 U	250 U	25 U	250 U		
Anthracene	250 U	25 U	250 U	25 U	250 U		
Di-n-Butylphthalate	250 U	25 U	250 U	25 U	250 U		
Fluoranthene	250 U	25 U	250 U	25 U	250 U	25 U	
Pyrene	250 U	25 U	250 U	25 U	250 U		
Butylbenzylphthalate	250 U	25 U	250 U	25 U	250 U	25 U	
3,3'-Dichlorobenzidine	200 U	20 U	200 U	20 U	200 U		
Benzo (a) anthracene	250 U	25 U	250 U	25 U	250 U		
Chrysene	250 U				250	7	
bis(2-Ethylhexyl)phthalate	250 U		JB 250 U	19 JB		e	
Di-n-Octyl phthalate	250 U	7 25 U		25 U	250 U		
Benzo(b)fluoranthene	250 U	r 25 U		25 U	250 U	25 U	
Benzo(k)fluoranthene	250 U	71	7 250 U	25 U	250 U		
Benzo(a)pyrene	250 U	r 25 u	1 250 U	25 U	250 U	25 U	
Indeno (1, 2, 3-cd) pyrene	250 U	73			250 U	25. U	
Dibenzo (a, h) anthracene	250 U		7	25 U	250 U	25 U	
Benzo(g,h,i)perylene			2		2	25 U	_
Carbazole	250 U	25	250	25 U	250 U	25 U	
(1) - Cannot be separated from Diphenylamine	diphenylamine.	*= Outside of	EPA CLP QC	limits.			

Roy F. Weston, Inc. Lionville Laboratory

Work Order: 02281012012 Page: Semivolatiles by GC/MS, HSL List Client: COR-HOT GAS RFW Batch Number: 9602L963

96LE0209-MB1 2.50 total ug 17 * 17 * 120 25 SBLKSO BSD 25 25 25 25 25 25 25 25 67 70 59 58 31 84 96LE0209-MB1 total ug **19** * 73 25 120 25 25 25 25 25 25 18 25 SBLKSO BS 9 65 36 84 96LE0209-MB1 total ug 120 AIR 19 Cust ID: AFTIN-EXP-R2 AFTIN-EXP-R3 AFTIN-EXP-R3 SBLKSO 25.0 total ug 035 250 250 250 250 1200 250 250 250 250 250 250 250 250 250 250 250 250 250 250 AIR 250 2.50 total ug 120 034 25 25 25 AIR 25 25 25 25 25 25 25 73 25.0 total ug 250 250 250 250 250 250 250 250 250 250 1200 250 250 250 250 250 250 250 250 250 AIR 250 250 250 p-Terphenyl-d14 Nitrobenzene-d5 Phenol-d5 2,4,6-Tribromophenol Units: RFW#: Matrix: D.F.: 2-Fluorobiphenyl 2-Fluorophenol bis (2-Chloroisopropyl) ether_ bis (2-Chloroethoxy) methane N-Nitroso-Di-n-propylamine Hexachlorocyclopentadiene 4-Chloro-3-methylphenol bis (2-Chloroethyl) ether 1,2,4-Trichlorobenzene 2-Methylnaphthalene Hexachlorobutadiene 1,2-Dichlorobenzene 1,3-Dichlorobenzene 1,4-Dichlorobenzene 2,4-Dimethylphenol 2,4-Dichlorophenol Hexachloroethane 4-Chloroaniline 4-Methylphenol Benzyl alcohol 2-Methylphenol 2-Chlorophenol 2-Nitrophenol Nitrobenzene_ Benzoic acid Naphthalene Information Isophorone Surrogate Recovery Sample

*= Outside of EPA CLP QC limits.

	lient: COR-H	- 1	Work Order:	0228101201	S Page: 3D	SBLKSO BSD	5 !
Cust	ID: AFTIN-EXP-R2	AFTIN-BXP-R3 -FB	AFTIN-BAF-K3				
RF	RFW#: 033	034	035	96LE0209-MB1	96LE0209-MB1	96LE0209-MB1	. 1
C - C B-: - h cwowbonc	250 U	25 U	250 U	25 U		2	_
2, 4, 6-II Iciii Opiieii o.	1200 U		1200 U	120 U		0	-
2, 4, 3- II Telliot Opinellot	250 U	25 U	250 U	25 U	25 U		p :
2 - Cillot Gilapine in a series of a serie	1200 U	120 U	1200 U				ח
Z-NICEOGIILLIIIG	250 U	25 U	250 U	25 U	25 U	25 [.
Diffectifyingiace	250 U	25 U	250 U	25 U	25 U	25 (5
Acenaphenylene	250 U		250 U	25 T	1 25 U	25 1	5
2,6-Dinitrocoluene	1200 11	120 U	1200 U	120 U	1 120 U	120	5
3-Nitroaniline	25.50 U	N	250 U	25 1	74 %	69	₩
Acenaphthene	1200 U	120 U	1200 U	120 1	J 120 U	120	b
2,4-Dinicrophenor	1200 U	120 U	1200 U	120	1 19 %	19	a)eo
4-Nitrophenor	250 U	25 U	250 U	1 25 1	J 25 U	25	D
Dibenzoiuran	250 U	25 U	250 U	1 25 1	J 82 %	9/	dю
2,4-Dinitrotoluene	250 U	25 U	250 U	1 25 1	J 25 U		n
Dietnyiphthaidte	250 U		250 U	1 25 1	J 25 U	25	n
4-Chlorophenyi-phenyiecher	250 U	25 U	250 U	1 25	J 25 U	. 52	n
Fluorene	1200 U	120 U	1200 U	1 120	U 120 U	120	Þ
4-Nitroaniline	1200 U	120 U	1200 C	120	U 120 U	120	Þ
4,6-Dinicio-z-metny pricio-z-	250 U	25 U	250 U	1 25	U 25 U	25	D
N-NICIOSOULDIGINITIE (1)	250 U	25 U	250 1	J 25	U 25 U	1 25	n
4-Bromopheny I-pheny recuer	250 U	1 25 U	250	J 25	U 25 U	1 25	n
Hexachloropelizelle	1200 C	120 U	1200	U 3	J 78	. 82	~
Pencachiorophenor	250 U	1 25 U	250 t	U 25	U 25 U	1 25	D
Phenanchrene	250 (J 25 U	1 250	U 25	U 25 U	1 25	ם
Anthracene	250	J 25 U	1 250 1	U 25	U 25 U	J 25	n
D1-n-BucyIphenarace	7 050	1 25 U	1 250 1	U 25	U 25 U	1 25	n
Fluoranthene	250		1 250 1	U 25	U 77 🕏	89	₩
Pyrene	7 040		1 250	U 25	U 25 U	J 25	n
Butylbenzylphthalate	1 005			U 50	n 05 . n	J 50	D
3, 3' -Dichloropenziquine	250 1	1 25 1	1 250	U 25		U 25	Þ
Benzo (a) anthracene	250	1 25 1	1 250	U 25	U 25 U	J 25	D
Chrysene	250	10	150	7	J 13 J	JB 25	Þ
bis (2-Ethylhexyl) putnatate	050	25 1	J 250	U 25	U 25 U	u 25	Ω
Di-n-Octyl purnalare			1 250	U 25	U 25 U	U 25	n
Benzo(b)fluoranthene	7.00		250	11 25	U 25 U	U · 25	ם
Benzo(k)fluoranthene	000		050	11 25	U . 25 1	U 25	n
Benzo (a) pyrene	067	0.70			U 25 U	U 25	n
Indeno (1, 2, 3-cd) pyrene	250		000	11 25		U 25.	D
Dibenzo (a, h) anthracene	250		0000			U 25	Ω
Benzo(g,h,i)perylene	250	U 25	250	25.		U 25	Ω
	250	67	מייי בי		l	ı	
(1) - Cannot be separated for	from Diphenylamine.	*= Outside o	EFA CLE VC			(
		•	4				

Ionville Laboratory Semivolatiles by GC/MS, HSL List Roy F. Weston, Inc.

(SL List Report Date: 02/20/96 15:31 CT Work Order: 02281012012 Page: 4a Client: COE-HOT GAS RFW Batch Number: 96021963

										נו נו נו נו					•																					
SBLKSX BSD	96LE0236-MB1	AIR	2.50	total ug	70 %	8 68	8 8	63 %	105 %	71 \$) IC	96 (9 92 ()	25 U	57 %	25 U	25 U	25 U	25 U	25 U	62	25 U	25 U	25 U	25 U	25 U	120 U	25 U	25 U	99	25 U	25 U	25 U	75 %	25 U	25 U	
SBLKSX BS	96LE0236-MB1	AIR	2.50	total ug	71 %	\$	8 8	62 %	102 %	74 %	11 30	1 99	25 U	55	25 U	25 U	25 U	25 U	25 U	e 3 *	25 U	25 U	25 U	25 U	25 U	120 U	25 U	25 U	6 5	25 U	25 U	25 U	77 %	25 U	25 U	
SBLKSX	96LE0236-MB1	AIR	2.50	total ug	53 %	67	712 *	48 %	79 %	56	25 25 25 25 25 25 25 25 25 25 25 25 25 2	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	120 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	_ 25 U	
Cust ID: 8	RFW#:	. Matrix:	D.F.:	Unita:	Nitrobenzene-d5	2-Fluorobiphenyl	p-Terphenyl-d14	Phenol-d5	2-Fluorophenol	2,4,6-Tribromophenol	FileHOL Lia (2 Ohloscothul) othor	Deciry 1/ eciret	Obenzene	obenzene	hol	obenzene	nol	bis (2-Chloroisopropyl) ether	nol	N-Nitroso-Di-n-propylamine	thane	9		lol	1phenol	ط ع	bis (2-Chloroethoxy) methane	ophenol	1,2,4-Trichlorobenzene		line	outadiene	4-Chloro-3-methylphenol	hthalene	Hexachlorocyclopentadiene	
	Sample	Information				Surrogate	Recovery	•			Filenot Ling (2 Ch) ou	2-Chlorophenol	1 3-Dichlorobenzene	1,4-Dichlorobenzene	Benzyl alcohol	1,2-Dichlorobenzene	2-Methylphenol	bis (2-Chlor	4-Methylphenol	N-Nitroso-D	Hexachloroethane	Nitrobenzene	Isophorone	2-Nitrophenol	2,4-Dimethylphenol	Benzoic acid	bis(2-Chlor	2,4-Dichlorophenol	1,2,4-Trich	Naphthalene	4-Chloroaniline	Hexachlorobutadiene	4-Chloro-3-	2-Methylnaphthalene	Hexachloroc	1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2

Cust ID: SBI	SBLKSX		SBLKSX BS	SBLKS	SBLKSX BSD		
RFW#: 961	96LE0236-MB1	ᆟ	96LE0236-MB1	96LE0	96LE0236-MB1	Ţ.	
2,4,6-Trichlorophenol	25	D	25 U		25	Ω	1
2,4,5-Trichlorophenol	120	D	120 U		120	n	
2-Chloronaphthalene	25	D	25 U		25	n	
2-Nitroaniline	120	D	120 U		120	n	
Dimethylphthalate	25	D	. 25 U		25	n	
Acenaphthylene	25	n	25 U		25	n	
2,6-Dinitrotoluene	25	Þ	25 U		25	n	
3-Nitroaniline	120	n	120 U		120	Ω	
Acenaphthene	:125	n	3 9 <i>L</i>		75	ф	
2,4-Dinitrophenol	120	ם	120 U	_	120	Ω	
4-Nitrophenol	120	D	54 %		28	من	
Dibenzofuran	25	Þ	25 U	•	25	Ω	
2.4-Dinitrotoluene	25	Þ	77 \$		9/	œ	
Diethylphthalate	25	D	25 U	_	25	U	
4-Chlorophenyl-phenylether	25	Ω	25 U	_	25	n	
Fluorene	25	n	.25 U	_	25	n	
4-Nitroaniline	120	D	120 U	_	120	n	
4.6-Dinitro-2-methylphenol	120	D	120 U	_	120	Ω	
N-Nitrosodiphenylamine (1)	25	Þ	25 U	_	25	Ω	
4-Bromophenyl-phenylether	25	D	25 U	_	25	Ω	
Hexachlorobenzene	25	D	25 t	,	25	, D	
Pentachlorophenol	120	ח	83	مد	82	d)n	
Phenanthrene	25	n	25 1	ח	25	Ω	
Anthracene	25	D	25 1	n	25	Ω	
Di-n-Butvlohthalate	25	Ω	25 1	ם	25	Ω	
Fluoranthene	25	Ω	25 (5	25	Ω	
Pyrene	25	D	81 1	مد	92	مين	
Rutvlbenzvlohthalate	25	ח	25 1	b	25	Ω	
3.3'-Dichlorobenzidine	50	Ω	20 05	5	20	n	
Benzo (a) anthracene	25	ם	25 1	D	25	D	
Chrysene	25	Ω	25 1	D	25	Ω	
bis(2-Ethylhexyl)phthalate	25	D	25 1	5	25	n	
Di-n-Octvl phthalate	25	n	25	D	25	Ω	
Renzo (b) fluoranthene	25	ď	25	D	25	U	
Benzo(k) fluoranthene	25	ם	25	D	. 25	Ω	
Benzo (a) pyrene	25	D	25	Þ	25	Ω	
Indeno(1,2,3-cd)pyrene	25	D	25	n	25	Ď	
Dibenzo (a, h) anthracene	25	ח	25	Ω	25	Ω	
Benzo(g,h,i)perylene	25	ם	25	n .	25	D	
Carbazole	25	Þ	25	Ω	25	Ω	
Action District	oning line		t Cutaide	F EDDA C	T.D. OC.	limita	

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.



CASE NARRATIVE



Roy F. Weston, Inc. 208 Welsh Pool Road Lionville, Pennsylvania 19341-1333 610-701-6100 • Fax 610-701-6140

LIONVILLE LABORATORY ANALYTICAL REPORT

Client: COE-HOT GAS

RFW#: 9602L963

W.O. #: 02281-012-012-1200-00

Date Received: 07 February 1996

SEMIVOLATILE

The set of samples consisted of five (5) air samples collected on 02 and 04 1996. Each sampling train consisted of three fractions: condensate, solid (filter/XAD), and solvent; each fraction was analyzed and reported individually.

These samples were prepared for Method 8330 analyses on 07 and 08 February 1996; and processed for Method 8270 on 09 and 14 February 1996, and analyzed according to criteria set forth in SW 846 Method 8270 for TCL Semivolatile target compounds on 11,13,17,19 and 20 February 1996.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. Four (4) mL portions of the 8330 Acetonitrile extracts were spiked with Semivolatile surrogates and partitioned into Methylenechloride. Due to the presence of Acetonitrile in the initial extracts, poor chromatography was observed in the Semivolatile analysis for samples AFTOUT-EXPLSV-R2COMP, AFTOUT-EXPLSV-R3COND, AFTOUT-EXPLSV-BTCOND, AFTOUT-EXPLSV-R2-FX, AFTOUT-EXPLSV-R3-FX and AFTOUT-EXPLSV-BT-FX. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
- 2. All required holding times for extraction and analysis were met.
- 3. Non-target compounds were detected in these samples.
- 4. Three (3) of one-hundred-twenty-six (126) surrogate recoveries were outside EPA QC limits. However, EPA CLP surrogate recovery criteria were met {i.e., no more than one outlier per fraction (acid and base neutral) and no recoveries less than 10%}.
- 5. Two (2) of forty-four (44) blank spike recoveries were outside EPA QC limits.
- 6. The method blank 96LE0209-MB1 contained the target compound Pentachlorophenol and the common contaminant Bis (2-Ethylhexyl)phthalate at levels less than the CRQL.
- 7. All internal standard area and retention time criteria were met.



8. The sample IDs for this set of samples were modified (truncated) to accommodate EPA nomenclature, which allows twenty (20) characters on Organic CLP forms.

FOR J. Michael Taylor

Vice President and Laboratory Manager

Lionville Analytical Laboratory

sb/bna/02-963b.cn

7-72-56

Date



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GLOSSARY OF BNA DATA

DATA QUALIFIERS

sample quantitation limit which is included and corrected for dilution and percent moisture. Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is J assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J. This flag is used when the analyte is found in the associated blank as well as in the sample. It В

Compound was analyzed for but not detected. The associated numerical value is the estimated

- indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- Indicates that the compound was detected beyond the calibration range and was subsequently E analyzed at a dilution.
- Identifies all compounds identified in an analysis at a secondary dilution factor. D
- Interference. I
- Result qualitatively confirmed but not able to quantify. NO
- Indicates that a TIC is a suspected aldol-condensation product.
- Indicates presumptive evidence of a compound. This flag is only used for tentatively identified N compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- This flag is used for a TIC compound which is quantified relative to a response factor generated X from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Additional qualifiers used as required are explained in the case narrative. Y

mmz\10-94\gioss.bna



GLOSSARY OF BNA DATA

ABBREVIATIONS

Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported. BS

Indicates blank spike duplicate. **BSD**

Indicates matrix spike. MS

Indicates matrix spike duplicate. **MSD**

Suffix added to sample number to indicate that results are from a diluted analysis. DL

Not Applicable. NA

Dilution Factor. DF

Not Required. NR

Indicates Spiked Compound. SP, Z

mmz\10-94\gloss.bna



TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP Missed Peak: manually added peak not found by automatic quan program.
- PA Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene is o mers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- PI Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

RFW 21-21-035/A-08/93



QC SUMMARY

2D SOIL SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot No.: 9602L963

		S1	S2	S3	S4	S 5	S6	OTHER	TOT
	CLIENT	/NTBZ)#			(PHL)#	(2FP)#	(TBP)#		OUT
	SAMPLE NO.	(ND2/#		=========	=======	======	======		====
		===== 67	68	83	55	80	84	ļ	0
01	AFTOUT-EXPLSV-R2COMP		62	91	50	69	82		j 0 j
02	AFTOUT-EXPLSV-R3COND	65	72	81	52	72	75		0
03	AFTOUT-EXPLSV-BTCOND	61	72 55	83	53	104	48	i	i oi
04	AFTIN-EXP-R2-COND	61	55 51	1 67	49	106	49		i oi
05	AFTIN-EXP-R3-COND	63		67 94	1 68	82	71		ioi
06	AFTOUT-EXPLSV-R2-FB	74	66	!	75	1 ' 95 ⁻	73	!]	ioi
07	AFTOUT-EXPLSV-R2-FX	92	76	104 99	1 65	1 77	72	1	0
08	AFTOUT-EXPLSV-R3-FB	73	63	!	65	91	75	i	Ö
	AFTOUT-EXPLSV-R3-FX	90	74	101	61	68	62	1	0
10	AFTOUT-EXPLSV-BT-FB	69	64	93	73	l 92	72	1	ا ا
11	AFTOUT-EXPLSV-BT-FX	93	68	109	!	1113	76	i I	0
12	AFTIN-EXP-R2-FB	70	79	105	68	113 45	44	i i	0.
13	AFTIN-EXP-R2-FX	31	33	64	30	!	60	1	1 0
	AFTIN-EXP-R3-FB	54	66	87	52	73		i 1	1 0
	AFTIN-EXP-R3-FX	56	68	87	57	80	71	1	1 1
	SBLKSOLE0209-MB1	74	75	81	19 *	46	68		1 -
	SBLKSOLE0209-MB1 BS	72	82	84	19 *	36	91		1
	SBLKSOLE0209-MB1 BSD	66	77	75	17 *	!	84		1 1
	SBLKSXLE0236-MB1	53	67	72	48	79	56		1 0
	SBLKSXLE0236-MB1 BS	71	89	94	62	102	74		0
21	SBLKSXLE0236-MB1 BSD	70	89	89	63	105	71		0
			l	.1	_

			QC LIMITS
C1	(NRZ)	= Nitrobenzene-d5	(23-120)
		= 2-Fluorobiphenyl	(30-115)
		= p-Terphenyl-d14	(18-137)
		= Phenol-d5	(24-113)
		= 2-Fluorophenol	(25-121)
		= 2,4,6-Tribromophenol	(19-122)

- # Column to be used to flag recovery values
- * Values outside of QC limits
- D Surrogates diluted out

3D SOIL SEMIVOLATILE BLANK SPIKE/BLANK SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot No.: 9602L963

BLANK Spike - Sample No.: SBLKSOLE0209-MB1

Level: (low/med) LOW

COMPOUND	SPIKE	SAMPLE	BS	BS	QC
	ADDED	CONCENTRATION	CONCENTRATION	%	LIMITS
	UG/L	UG/L	UG/L	REC #	REC
Phenol 2-Chlorophenol 1,4-Dichlorobenzene N-Nitroso-Di-n-propylamine 1,2,4-Trichlorobenzene 4-Chloro-3-methylphenol Acenaphthene 4-Nitrophenol 2,4-Dinitrotoluene Pentachlorophenol Pyrene	250 250 125 125 125 250 125 250 125 250	0 0 0 0 0 0 0 3.32	44.9 163 80.7 96.2 90.7 187 '93.1 47.2 102 199 96.8	18 * 65 77 73 75 75 19 82 78 77	26 - 90 25 -102 28 -104 41 -126 38 -107 26 -103 31 -137 11 -114 28 - 89 17 -109 35 -142

COMPOUND	SPIKE ADDED UG/L	BSD CONCENTRATION UG/L	BSD % REC#	% RPD #	QC I RPD	IMITS REC
Phenol 2-Chlorophenol 1,4-Dichlorobenzene N-Nitroso-Di-n-propylamine 1,2,4-Trichlorobenzene 4-Chloro-3-methylphenol Acenaphthene 4-Nitrophenol 2,4-Dinitrotoluene Pentachlorophenol Pyrene	250 250 125 125 125 250 125 250 125 250	41.4 149 72.9 87.6 84.0 171 86.8 48.2 94.6 208 85.4	17 * 59 58 70 67 68 69 19 76 82 68	5 9 11 9 8 9 8 0 7 5 12	35 50 27 38 23 33 19 50 47 47 36	26 - 90 25 -102 28 -104 41 -126 38 -107 26 -103 31 -137 11 -114 28 - 89 17 -109 35 -142

[#] Column to be used to flag recovery and RPD values with an asterisk

RPD: 0 out of 11 outside limits

Spike Recovery: 2 out of 22 outside limits

COMMENTS:

5/88 Rev.

^{*} Values outside of QC limits

3D

SOIL SEMIVOLATILE BLANK SPIKE/BLANK SPIKE DUPLICATE RECOVERY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot No.: 9602L963

BLANK Spike - Sample No.: SBLKSXLE0236-MB1

Level: (low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	BS CONCENTRATION UG/KG	BS % REC #	QC LIMITS REC
Phenol	250	0	126	51	26 - 90
2-Chlorophenol	250	0	164	66	25 -102
,4-Dichlorobenzene	125	0	68.3	55	28 -104
N-Nitroso-Di-n-propylamine	125	0	78.4	63	41 -126
,2,4-Trichlorobenzene	125	0	81.2	65	38 -107
-Chloro-3-methylphenol	250	0	194	77	26 -10
Acenaphthene	125	0	95.2	76	31 -13
-Nitrophenol	250	0	136	54	11 -114
2,4-Dinitrotoluene	125	0	95.7	77	28 - 89
Pentachlorophenol	250	0	207	83	17 -10
Pyrene	125	0	101	81	35 -142

COMPOUND	SPIKE ADDED UG/KG	BSD CONCENTRATION UG/KG	BSD % REC #	% RPD #	-	LIMITS REC
	= 250	129	51	====== o	35	== ==== == 26 - 90
Phenol	250 250	163	65	1 1	50	25 -102
2-Chlorophenol	125	71.4	57	3	27	28 -104
N-Nitroso-Di-n-propylamine	125	78.1	62	1	38	41 -126
1.2.4-Trichlorobenzene	125	82.6	66	jı	23	38 -107
4-Chloro-3-methylphenol	250	187	75	2	33	26 -103
Acenaphthene	125	93.8	75	1 1	19	31 -137
4-Nitrophenol	250	145	58	7	50	11 -114
2,4-Dinitrotoluene	125	94.6	76	1	47	28 - 89
Pentachlorophenol	250	205	82	1	47	17 -109
Pyrene	125	95.0	76	6	36	35 -142

[#] Column to be used to flag recovery and RPD values with an asterisk

RPD: 0 out of 11 outside limits

Spike Recovery: 0 out of 22 outside limits

COMMENTS:

FORM III SV-2

5/88 Rev.

^{*} Values outside of QC limits

4B SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021103

Lab Sample ID: 96LE0209-MB1

Date Extracted: 02/09/96

Extraction: (SepF/Cont/Sonc) SEPF

Time Analyzed: 1123

Date Analyzed: 02/11/96

Level: (low/med) LOW

Matrix: (Soil/Water) AIR_

Instrument ID: 4500V

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

CLIENT	LAB	LAB -	DATE
SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
=======================================	=========	========	========
01 SBLKSOLE0209-MB1 BS	96LE0209-MB1S	V021104	02/11/96
02 SBLKSOLE0209-MB1 BSD	96LE0209-MB1T	V021105	02/11/96
03 AFTOUT-EXPLSV-R2COMP	9602L963-004	V021112	02/11/96
04 AFTOUT-EXPLSV-R3COND	9602L963-009	V021113	02/11/96
05 AFTOUT-EXPLSV-BTCOND	9602L963-014	V021114	02/11/96
06 AFTOUT-EXPLSV-R2-FB	9602L963-026	V021308	02/13/96
07 AFTOUT-EXPLSV-R2-FX	9602L963-027	V021309	02/13/96
08 AFTOUT-EXPLSV-R3-FB	9602L963-028	V021310	02/13/96
09 AFTOUT-EXPLSV-R3-FX	9602L963-029	V021311	02/13/96
10 AFTOUT-EXPLSV-BT-FB	9602L963-030	V021312	02/13/96
11 AFTOUT-EXPLSV-BT-FX	9602L963-031	V021313	02/13/96
	l	l	l

COMMENTS:

5/88 Rev.

SEMIVOLATILE METHOD BLANK SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021703

Lab Sample ID: 96LE0236-MB1

Date Extracted: 02/14/96

Date Analyzed: 02/17/96

Time Analyzed: 1113

Matrix: (Soil/Water) AIR___

Level: (low/med) LOW

Instrument ID: 4500V

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

CLIENT	LAB	LAB	DATE
SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED
	=======================================	=======	=======
01 SBLKSXLE0236-MB1 BS	96LE0236-MB1S	V021704	02/17/96
02 SBLKSXLE0236-MB1 BSD	96LE0236-MB1T	V021705	02/17/96
03 AFTIN-EXP-R2-FB	9602L963-032	V021714	02/17/96
04 AFTIN-EXP-R2-FX	9602L963-033	V021905	02/19/96
05 AFTIN-EXP-R3-FB	9602L963-034	V021906	02/19/96
06 AFTIN-EXP-R3-FX	9602L963-035	V021907	02/19/96
07 AFTIN-EXP-R2-COND	9602L963-019	V022003	02/20/96
08 AFTIN-EXP-R3-COND	9602L963-024	V022004	02/20/96
i			<u> </u>

COMMENTS:

SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Contract: 2281-12-12 Lab Name: Roy F. Weston, Inc.

Case No.: COE-HOT GAS

DFTPP Injection Date: 02/08/96 Lab File ID: V020801

DFTPP Injection Time: <u>0830</u> Instrument ID: 4500V

1	$\hat{}$	% RELATIVE
m/e	ION ABUNDANCE CRITERIA	ABUNDANCE
1 111/6	TON ADDROAMES ONSTANDAMENT	
=====		55.9
51	30.0 - 60.0% of mass 198	!
68	Less than 2.0% of mass 69	0.01 0.0)1
69	Mass 69 relative abundance	63.2
70	Less than 2.0% of mass 69	0.04 0.0)1
127	40.0 - 60.0% of mass 198	53.8
197	Less than 1.0% of mass 198	0.0/
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.1 /
275	10.0 - 30.0% of mass 198	26.9
365	Greater than 1.00% of mass 198	4.52
441	Present, but less than mass 443	7.2//
442	Greater than 40.0% of mass 198	61.2
443	17.0 - 23.0% of mass 442	11.8(19.3)2
II		
	1-Value is % mass 69 2-Value is % ma	ass 442

	CLIENT	LAB	LAB	DATE	TIME
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
	=======================================	=======================================	=======================================	========	
01	SSTD50	SSTD50	V020802	02/08/96	0908
02	SSTD80	SSTD80	V020803	02/08/96	1108
03	SSTD120	SSTD120	V020804	02/08/96	1157
04	SSTD160	SSTD160	V020805	02/08/96	1246
05	SSTD20	SSTD20	V020806	02/08/96	1336
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SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc. Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021101 DFTPP Injection Date: 02/11/96

Instrument ID: 4500V DFTPP Injection Time: 0854

		% RELATIVE
m/e	ION ABUNDANCE CRITERIA	ABUNDANCE
=====		=======================================
51	30.0 - 60.0% of mass 198	42.9
68	Less than 2.0% of mass 69	0.01 0.0)1
69	Mass 69 relative abundance	44.0
70	Less than 2.0% of mass 69	0.01/ 0.0)1
127	40.0 - 60.0% of mass 198	46.2
197	Less than 1.0% of mass 198	0.0%
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	6.8
275	10.0 - 30.0% of mass 198	23.5
365	Greater than 1.00% of mass 198	2.97
441	Present, but less than mass 443	5.8
442	Greater than 40.0% of mass 198	47.1
443	17.0 - 23.0% of mass 442	9.0(19.1)2
i		

1-Value is % mass 69

2-Value is % mass 442

	CLIENT	LAB	LAB	DATE	TIME
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
	SAMPLE NO.			========	=========
0.7	sstd50	SSTD50	V021102	02/11/96	0941
01		96LE0209-MB1	V021103	02/11/96	1123
02	SBLKSOLE0209-MB1	96LE0209-MB1S	V021103	02/11/96	1212
03	SBLKSOLE0209-MB1 BS			02/11/96	1301
04	SBLKSOLE0209-MB1 BSD	96LE0209-MB1T	V021105		
05	AFTOUT-EXPLSV-R2COMP	9602L963-004	V021112	02/11/96	1845
06	AFTOUT-EXPLSV-R3COND	9602L963-009	V021113	02/11/96	1934
07	AFTOUT-EXPLSV-BTCOND	9602L963-014	V021114	02/11/96	2024
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SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc. Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021301 DFTPP Injection Date: 02/13/96

Instrument ID: 4500V DFTPP Injection Time: 1044

		% RELATIVE
m/e	ION ABUNDANCE CRITERIA	ABUNDANCE
=====		51.5
51	30.0 - 60.0% of mass 198	
68	Less than 2.0% of mass 69	0.4 (0.78)1
69	Mass 69 relative abundance	55.6
70	Less than 2.0% of mass 69	0.0(0.0)1
127	40.0 - 60.0% of mass 198	56.6
197	Less than 1.0% of mass 198	0.0-
198	Base Peak, 100% relative abundance	1 100.0
199	5.0 to 9.0% of mass 198	6.8
275	10.0 - 30.0% of mass 198	22.1/
365	Greater than 1.00% of mass 198	3.42
441	Present, but less than mass 443	6.0
442	Greater than 40.0% of mass 198	50.7
443	17.0 - 23.0% of mass 442	9.8(19.4)2

1-Value is % mass 69

2-Value is % mass 442

1	CLIENT	LAB	LAB	DATE	TIME
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
		============	=======================================	========	=======
01	SSTD50	SSTD50	V021303	02/13/96	1229
02	SSTD80	SSTD80	V021304	02/13/96	1342
03	SSTD120	SSTD120	V021305	02/13/96	1431
04	SSTD160	SSTD160	V021306	02/13/96	1520
05	SSTD20	SSTD20	V021307	02/13/96	1610
06	AFTOUT-EXPLSV-R2-FB	9602L963-026	V021308	02/13/96	1748
07	AFTOUT-EXPLSV-R2-FX	9602L963-027	V021309	02/13/96	1837
08	AFTOUT-EXPLSV-R3-FB	9602L963-028	V021310	02/13/96	1926
09	AFTOUT-EXPLSV-R3-FX	9602L963-029	V021311	02/13/96	2015
10	AFTOUT-EXPLSV-BT-FB	9602L963-030	V021312	02/13/96	2105
11	AFTOUT-EXPLSV-BT-FX	9602L963-031	V021313	02/13/96	2154
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SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Contract: 2281-12-12 Lab Name: Roy F. Weston, Inc.

Case No.: COE-HOT GAS

DFTPP Injection Date: 02/16/96 Lab File ID: V021601

DFTPP Injection Time: 0926 Instrument ID: 4500V

		% RELATIVE
m/e	ION ABUNDANCE CRITERIA	ABUNDANCE
====		
51	30.0 - 60.0% of mass 198	39.9
68	Less than 2.0% of mass 69	0.6(1.3)1
69	Mass 69 relative abundance	49.3
70	Less than 2.0% of mass 69	0.0(, 0.0)1
127	40.0 - 60.0% of mass 198	55.2
197	Less than 1.0% of mass 198	0.7
198	Base Peak, 100% relative abundance	1 100.00
199	5.0 to 9.0% of mass 198	6.6
275	10.0 - 30.0% of mass 198	28.3
365	Greater than 1.00% of mass 198	5.50
441	Present, but less than mass 443	12.2
442	Greater than 40.0% of mass 198	93.2
443	17.0 - 23.0% of mass 442	17.7 (19.0)2
	1-Value is % mass 69 2-Value is % n	ass 442

	CLIENT	LAB	LAB	DATE	TIME
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
01	SSTD50	SSTD50	 V021602	02/16/96	1010
02		SSTD80	V021602	02/16/96	1148
03		SSTD120	V021604	02/16/96	1237
04		SSTD160	V021605	02/16/96	1326
05		SSTD20	V021606	02/16/96	1416
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SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: V021701

DFTPP Injection Date: 02/17/96

DFTPP Injection Time: 0849 Instrument ID: 4500V

		% RELATIVE
m/e	ION ABUNDANCE CRITERIA	ABUNDANCE
m/ E		=======================================
51	30.0 - 60.0% of mass 198	33.2V
	Less than 2.0% of mass 69	0.74 1.4)1
68	Mass 69 relative abundance	45.6
	Less than 2.0% of mass 69	0.01, 0.0)1
70	40.0 - 60.0% of mass 198	52.9
	40.0 - 60.0% Of mass 198	0.00
197	Less than 1.0% of mass 198	100.0
198	Base Peak, 100% relative abundance	7.2
199	5.0 to 9.0% of mass 198	29.1
275	10.0 - 30.0% of mass 198	5.46
365	Greater than 1.00% of mass 198	10.9
441	Present, but less than mass 443	83.5
442	Greater than 40.0% of mass 198	16.1(19.3)2
443	17.0 - 23.0% of mass 442	10.1(19.5/2
		1
	1-Value is % mass 69 2-Value is % m	155 774

	OT TIME	LAB	LAB	DATE	TIME
1	CLIENT	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
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- !		SSTD50	V021702	02/17/96	0923
01	SSTD50	96LE0236-MB1	V021703	02/17/96	1113
02	SBLKSXLE0236-MB1	96LE0236-MB1S	V021704	02/17/96	1201
03	SBLKSXLE0236-MB1 BS	96LE0236-MB1T	V021701	02/17/96	1251
04	SBLKSXLE0236-MB1 BSD	9602L963-032	V021703	02/17/96	2014
05	AFTIN-EXP-R2-FB	30070303-035	1	1	ĺ
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SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Contract: 2281-12-12 Lab Name: Roy F. Weston, Inc.

Case No.: COE-HOT GAS

DFTPP Injection Date: 02/19/96 Lab File ID: V021901

DFTPP Injection Time: 0846 Instrument ID: 4500V

!		% RELATIVE
m/e	ION ABUNDANCE CRITERIA	ABUNDANCE
=====		=======================================
51	30.0 - 60.0% of mass 198	31.3
68	Less than 2.0% of mass 69	0.5(1.2)1
69	Mass 69 relative abundance	45.4
70	Less than 2.0% of mass 69	0.3(,0.69)1
127	40.0 - 60.0% of mass 198	53.6
197	Less than 1.0% of mass 198	0.0
198	Base Peak, 100% relative abundance	100.0
199	5.0 to 9.0% of mass 198	7.1
275	10.0 - 30.0% of mass 198	29.5
365	Greater than 1.00% of mass 198	6.24
441	Present, but less than mass 443	11.50
442	Greater than 40.0% of mass 198	90.4
443	17.0 - 23.0% of mass 442	16.9 Y 18.7)2
	1-Value is % mass 69 2-Value is % ma	ass 442

1	CLIENT	LAB	LAB	DATE	TIME
į	SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
Ì		=======================================	==========	========	
01	SSTD50	SSTD50	V021902	02/19/96	0921
02	AFTIN-EXP-R2-FX	9602L963-033	V021905	02/19/96	1222
03	AFTIN-EXP-R3-FB	9602L963-034	V021906	02/19/96	1311
04	AFTIN-EXP-R3-FX	9602L963-035	V021907	02/19/96	1400
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SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

Lab File ID: <u>V022001</u>

Instrument ID: 4500V

DFTPP Injection Date: 02/20/96

DFTPP Injection Time: 1059

.——		% RELATIVE
 m/e	ION ABUNDANCE CRITERIA	ABUNDANCE
=====	=======================================	34.6
51	30.0 - 60.0% of mass 198	! //
68	Less than 2.0% of mass 69	0.4(0.78)1
	Mass 69 relative abundance	53.6
69		0.3(~,0.56)1
70	Less than 2.0% of mass 69	56.8
127	40.0 - 60.0% of mass 198	0.6
197	Less than 1.0% of mass 198	100.0
198	Base Peak, 100% relative abundance	'
199	5.0 to 9.0% of mass 198	7.5
	10.0 - 30.0% of mass 198	27.70
275	Greater than 1.00% of mass 198	4.97
365	Greater than 1.00% of mass 150	7.6
441	Present, but less than mass 443	60.5
442	Greater than 40.0% of mass 198	11.2 (18.6) 2
443	17.0 - 23.0% of mass 442	1 11.20 16.672

1-Value is % mass 69

2-Value is % mass 442

1	CI TENT	LAB	LAB	DATE	TIME	
!	CLIENT	SAMPLE ID	FILE ID	ANALYZED	ANALYZED	
ļ	SAMPLE NO.		=======================================	==========	=========	
. !		SSTD50	V022002	02/20/96	1149	l
01	SSTD50	l I	V022003	02/20/96	1314	l
02	AFTIN-EXP-R2-COND	9602L963-019	V022003	02/20/96	1403	ĺ
03	AFTIN-EXP-R3-COND	9602L963-024	VUZZUU4	02/20/50		İ
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8B SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

RFW Lot: 9602L963

Case No.: COE-HOT GAS

Date Analyzed: 02/11/96

Lab File ID (Standard): <u>V021102</u>

Time Analyzed: 0941

Instrument ID: 4500V

	.	IS1 (DCB) AREA #	RT	IS2(NPT) AREA #	RT	IS3 (ANT) AREA #	RT =====
=:	12 HOUR STD	26253	9.000	118200	12.933	72624	18.533 =====
=:	UPPER LIMIT	52506	9.50	236400	13.43	145248	19.03 =====
=:	LOWER LIMIT	13127	8.50 =====	59100 =======	12.43	36312 =======	18.03 =====
	CLIENT SAMPLE NO.			(-=====
02 A 03 A 04 S 05 S	FTOUT-EXPLSV-R2COMP FTOUT-EXPLSV-R3COND FTOUT-EXPLSV-BTCOND BLKSOLE0209-MB1 BLKSOLE0209-MB1 BS BLKSOLE0209-MB1 BSD	32408 30942 32061 34581 23976 24764	====== 8.967 8.933 8.967 9.317 8.967	105050 114110 115633 124180	12.917 12.917 12.917 13.050 12.917 12.917	76161 78212 75023 87110	18.533 18.533 18.533 18.567 18.533 18.533

IS1 (DCB) = 1,4-Dichlorobenzene-d4

IS2 (NPT) = Naphthalene-d8

IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

Column used to flag internal standard area values with an asterisk

8C SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot: 9602L963

Lab File ID (Standard): <u>V021102</u>

Date Analyzed: 02/11/96

Instrument ID: 4500V Time Analyzed: 0941

		IS4 (PHN) AREA #	RT	IS5 (CRY) AREA #	RT	IS6 (PRY) AREA #	RT
	12 HOUR STD	110253	====== 23.183 =====	74447 	29.383	59131	33.267
	UPPER LIMIT	220506	23.68	148894	29.88	118262	33.77
	LOWER LIMIT	55127	22.68	37224	28.88	29566 =======	32.77
	CLIENT SAMPLE			t	<u>-</u>		
]	NO.	========	=====	========	=====	==========	=====
01	AFTOUT-EXPLSV-R2COMP		23.183		29.433		33.317
	AFTOUT-EXPLSV-R3COND	124635 120330	23.183 23.183		29.400 29.450		33.300 33.350
	AFTOUT-EXPLSV-BTCOND SBLKSOLE0209-MB1	106581	23.200		29.450		33.350
	SBLKSOLE0209-MB1 BS	138053	23.167		29.333		33.217
	SBLKSOLE0209-MB1 BSD	138599	23.167	128902	29.367	110335	33.267
	i i				l	l	I

IS4 (PHN) = Phenanthrene-dl0

IS5 (CRY) = Chrysene-dl2

IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

Column used to flag internal standard area values with an asterisk

page 1 of 1

FORM VIII SV-2

5/88 Rev.

8B SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: <u>2281-12-12</u>

Case No.: COE-HOT GAS

RFW Lot: 9602L963

Lab File ID (Standard): V021303

Date Analyzed: 02/13/96

Instrument ID: 4500V

Time Analyzed: 1229

١		IS1 (DCB)	-		IS2 (NPT)	1	IS3 (ANT)	!
		AREA	#	RT	AREA #	RT	AREA #	RT
		========	==	=====	=========	=====	========	=====
	12 HOUR STD	2344	16	9.033	92464	12.917	51916	18.500
l	=======================================	=======	===	=====	========	=====	=========	=====
i	UPPER LIMIT	4689	92	9.53	184928	13.42	103832	19.00
i		=======	===	=====	========	=====	========	=====
i	LOWER LIMIT	1172	23	8.53	46232	12.42	25958	18.00
i		========	===	=====		=====	========	=====
i	CLIENT SAMPLE				, '	1		
į	NO.					!		1
i		=======	===	=====	========	=====	=========	=====
ıi	AFTOUT-EXPLSV-R2-FB	2046	51	8.917	80469	12.867	<u>:</u>	18.483
	AFTOUT-EXPLSV-R2-FX	2234	11	8.933	76913	12.867	50871	18.483
	AFTOUT-EXPLSV-R3-FB	2273	37	8.917	88929	12.867	56327	18.483
	AFTOUT-EXPLSV-R3-FX	2017	78	8.933	70776	12.867	49491	18.483
•	AFTOUT-EXPLSV-BT-FB	2053	33	8.933	78412	12.883	49018	18.500
- 1	AFTOUT-EXPLSV-BT-FX	2112	20	8.850	69951	12.883	47836	18.483
İ				l		l		I

IS1 (DCB) = 1,4-Dichlorobenzene-d4

IS2 (NPT) = Naphthalene-d8

IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

Column used to flag internal standard area values with an asterisk

8C SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot: 9602L963

Lab File ID (Standard): V021303

Date Analyzed: 02/13/96

Instrument ID: 4500V Time Analyzed: 1229

	IS4 (PHN)		IS5 (CRY)	1	IS6 (PRY)	
	AREA #	RT	AREA #	RT	AREA #	RT
	========	=====	========	=====	========	=====
12 HOUR STD	72422	23.133	38331	29.483	28141	33.400
=======================================	========	=====	=========	=====	========	=====
UPPER LIMIT	144844	23.63	76662	29.98	56282	33.90
	========	=====	========	=====	=========	=====
LOWER LIMIT	36211	22.63	19166	28.98	14071	32.90
	========	=====	=========	=====		=====
CLIENT SAMPLE			'	_		
NO.						
=======================================		=====	========	=====		=====
1 AFTOUT-EXPLSV-R2-FB	78706	23.133	50014	29.417	37471	33.300
2 AFTOUT-EXPLSV-R2-FX	68960	23.133	44584	29.417	31811	33.317
3 AFTOUT-EXPLSV-R3-FB	85668	23.133	50280	29.400	38267	33.283
4 AFTOUT-EXPLSV-R3-FX	70247	23.133	43994	29.367	32690	33.250
5 AFTOUT-EXPLSV-BT-FB	77513	23.150	46045	29.433	35691	33.317
6 AFTOUT-EXPLSV-BT-FX	77318	23.133	42016	29.417	31104	33.317

IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

5/88 Rev.

[#] Column used to flag internal standard area values with an asterisk

8B SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: <u>2281-12-12</u>

Case No.: COE-HOT GAS

RFW Lot: 9602L963

Lab File ID (Standard): V021702

Date Analyzed: 02/17/96

Instrument ID: 4500V

Time Analyzed: 0923

1	IS1 (DCB)		IS2 (NPT)		IS3 (ANT)	
	AREA #	RT	AREA #	RT	AREA #	RT
12 HOUR STD	15343	9.033		12.933	55942	===== 18.517
UPPER LIMIT	30686	9.53	158754	13.43	111884	19.02
LOWER LIMIT	7672	8.53	39689	12.43	27971	18.02
CLIENT SAMPLE NO.	=======================================	=====	(=		
	========	=====	=========	=====	_========	=====
AFTIN-EXP-R2-FB	30444	8.933	113029	12.883	79977	18.500
SBLKSXLE0236-MB1	16389	9.050	92732	12.933	66762	18.500
SBLKSXLE0236-MB1 BS	18152	8.950	97286	12.900	67158	18.500
SBLKSXLE0236-MB1 BSD	20937	8.933	110507	12.883 	74066	18.500
		i	l	i	l	1

IS1 (DCB) = 1,4-Dichlorobenzene-d4

IS2 (NPT) = Naphthalene-d8

IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

Column used to flag internal standard area values with an asterisk

8C SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot: 9602L963

Lab File ID (Standard): V021702

Date Analyzed: 02/17/96

Instrument ID: 4500V

Time Analyzed: 0923

1	IS4 (PHN)		IS5 (CRY)		IS6 (PRY)	İ
	AREA #	RT	AREA #	RT	AREA #	RT
	========	=====		=====	=======================================	
12 HOUR STD	99241	23.150	90900	29.350	70658	33.217
_======================================	========	=====	=========	======	========	=====
UPPER LIMIT	198482	23.65	181800	29.85	141316	33.72
	========	======	========	=====		=====
LOWER LIMIT	49621	22.65	45450	28.85	35329	32.72
	========	=====		=====	========	=====
CLIENT SAMPLE				_		!
NO.						ļ
*****	=========	=====	=========	=====	==========	=====
AFTIN-EXP-R2-FB	124952	23.167	105986	29.383	98126	33.233
SBLKSXLE0236-MB1	102014	23.150	110707	29.400	112424	33.26
SBLKSXLE0236-MB1 BS	104483	23.167	110278	29.383	112934	33.26
SBLKSXLE0236-MB1 BSD	113166	23.150	126026	29.417	123967	33:30
1						<u> </u>

IS4 (PHN) = Phenanthrene-d10

IS5 (CRY) = Chrysene-dl2

IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

Column used to flag internal standard area values with an asterisk

5/88 Rev.

8B SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: <u>2281-12-12</u>

Case No.: COE-HOT GAS

RFW Lot: 9602L963

Lab File ID (Standard): V021902

Date Analyzed: 02/19/96

Instrument ID: 4500V

Time Analyzed: 0921

·	IS1 (DCB)		IS2 (NPT)		IS3 (ANT)	
i	AREA :	RT	AREA #	RT	AREA #	RT
	=========	: =====	========	=====	=========	=====
12 HOUR STD	19365	9.017	100772	12.883	70013	18.467
	========	. ======	=========	=====	=========	=====
UPPER LIMIT	38730	9.52	201544	13.38	140026	18.97
	========		========	=====	=======================================	=====
LOWER LIMIT	9683	8.52	50386	12.38	35007	17.97
	========	-	========	=====	========	=====
CLIENT SAMPLE		1	· ·	_	<u> </u>	ļ
NO.					!	!
		- =====	========	=====	=========	=====
1 AFTIN-EXP-R2-FX	30648	8.900	119152	12.850	•	18.450
2 AFTIN-EXP-R3-FB	31178	8.883	126515	12.833	79483	18.450
3 AFTIN-EXP-R3-FX	33974	8.900	139098	12.833	87786	18.450
<u> </u>		.1				l

IS1 (DCB) = 1,4-Dichlorobenzene-d4

IS2 (NPT) = Naphthalene-d8

IS3 (ANT) = Acenaphthene-dl0

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

Column used to flag internal standard area values with an asterisk

8C SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot: 9602L963

Lab File ID (Standard): <u>V021902</u>

Date Analyzed: 02/19/96

Instrument ID: 4500V

Time Analyzed: 0921

	IS4 (PHN)		IS5 (CRY)		IS6 (PRY)	
	AREA #	RT	AREA #	RT	AREA #	RT
	========	=====	========	=====		=====
12 HOUR STD	108998	23.100	79531	29.400	56356	33.26
=======================================	=========	=====	=========	=====	=========	=====
UPPER LIMIT	217996	23.60	159062	29.90	112712	33.7
	========	=====	=======================================	=====	=======================================	=====
LOWER LIMIT	54499	22.60	39766	28.90	28178	32.7
	========	=====	========	=====	========	=====
CLIENT SAMPLE	1	ĺ	1	-	,	
NO.	į	ĺ				
	========	=====	========	=====	========	=====
AFTIN-EXP-R2-FX	116641	23.100	99347	29.450	85554	33.33
AFTIN-EXP-R3-FB		23.100	98644	29.400	79816	33.26
AFTIN-EXP-R3-FX	133650	23.100	:	29.417	86832	33.30
WLIIM-EVL-K2-LV	1	i	İ	1		1

IS4 (PHN) = Phenanthrene-dl0

IS5 (CRY) = Chrysene-dl2

IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

Column used to flag internal standard area values with an asterisk

5/88 Rev.

8B SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: 2281-12-12

Case No.: COE-HOT GAS

RFW Lot: 9602L963

Lab File ID (Standard): V022002

Date Analyzed: 02/20/96

Instrument ID: 4500V

Time Analyzed: 1149

	IS1 (DCB)		IS2 (NPT)	1	IS3 (ANT)	
	AREA	# RT	AREA #	RT	AREA #	RT
, ====================================	=========	= =====	========	=====	========	=====
12 HOUR STD	21792	8.967	104115	12.867	71555	18.467
	=========	= =====				=====
UPPER LIMIT	43584	9.47	208230	13.37	143110	18.97
	=========	= =====	========	=====	=======	=====
LOWER LIMIT	10896	8.47	52058	12.37	35778	17.9
	========	= =====	========	======		=====
CLIENT SAMPLE		1 .	1 '	-		!
NO.				l		j
	========	= ======	=========			=====
AFTIN-EXP-R2-COND	30183	9.050	103002	12.900	69536	18.46
AFTIN-EXP-R3-COND	29088	8.900	104139	12.850	72970	18.46
İ		1		!		

IS1 (DCB) = 1,4-Dichlorobenzene-d4

IS2 (NPT) = Naphthalene-d8

IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

Column used to flag internal standard area values with an asterisk

8C SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: Roy F. Weston, Inc.

Contract: <u>2281-12-12</u>

Case No.: COE-HOT GAS

RFW Lot: 9602L963

Lab File ID (Standard): <u>V022002</u>

Date Analyzed: 02/20/96

Instrument ID: 4500V

Time Analyzed: 1149

	IS4 (PHN) AREA #	RT	IS5(CRY) AREA #	RT	IS6 (PRY) AREA #	 RT =====
12 HOUR STD	111985	23.100		29.433	53462 =======	33.300 =====
UPPER LIMIT	223970	23.60	155294	29.93	106924	33.80 =====
LOWER LIMIT	55993 ========	22.60	38824	28.93	26731 ========	32.80
CLIENT SAMPLE NO.	,			-	 	
=====================================	102648 112825	====== 23.117 23.117	•	29.417	63466 67600	33.283 33.233

IS4 (PHN) = Phenanthrene-d10

ISS (CRY) = Chrysene-d12

IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

Column used to flag internal standard area values with an asterisk

5/88 Rev.



SAMPLE DATA



ADDITIONAL DOCUMENTATION

Roy

Extract. Date: 02/08/96

Test: 0833

LIMS Report Date: 02/09/96

SAMPLE EXTRACTION RECORD

Sheet no.:

Method: ****

Analyst: GL

Client: COE-HOT GAS

Extraction Batch No: 96LLC017 Cleanup Date:

Analyst:

Adsorbent:

Solvent: DCM/ACETONE TO ACN

Sample No:		כדונו וומווני					1	the transfer of the state of th				1
		Client ID		WT/VOL	Mult.	Mult. Mult. VOL	VOL	VOL		Y/N	Mult. Y/N Solids	FACTOR
9602L916-	ၓ	COE-HOT GAS										
0 900	0	IN/OUT-EXP/SV-SB-ACE	7	1	1.0		10		2.0	z	0.0	20.0
020 0	0	AFTOUT-EXP/SV-R1-FB	7	-	1.0		10		2.0	z	0.0	20.0
023 (0	AFTIN-EXP-R1-FB	7	-	1.0		10		2.0	z		20.0
025 0	0	AFTIN-EXP-R1MS-FB	7	-	1.0		10		2.0	z		20.0
9602L963-	ರ	COE-HOT GAS										
026 0	0	AFTOUT-EXPLSV-R2-FB	7	г	1.0		10		2.0	z		20.0
028 0	0	AFTOUT-EXPLSV-R3-FB	7	7	1.0		10		2.0	z		20.0
030	0	AFTOUT-EXPLSV-BT-FB	7	-	1.0		10		2.0	Z		20.0
032 (0	AFTIN-EXP-R2-FB	7	~	1.0		10		2.0	z	0.0	20.0
034 (0	AFTIN-EXP-R3-FB	7	п	1.0		10		2.0	z	0.0	20.0
96LLC017-MB1 (0	BLK	7		1.0		10		2.0	z		20.0
96LLC017-MB1 0S	0.8	ВГК	7	1	1.0	1.0	10		2.0	z		20.0

ALL REQUIRED FILTRATION THROGH SODIUM SULFATE Comments:

50UL 41024101 1,2-DNB Surrogate: Spike:

125UL 461129B

Date Time Reason for Transfer	
Received By	
Date Time	
ed Relinquished By	
Extracts Transferred	A
Extract	2

SVV

RECORD
EXTRACTION
SAMPLE

Roy F. Weston, Inc. Lionville, Lab.

Sheet no.:

Analyst: DW Extraction Batch No: 96LE0209

Method: SEPF

Cleanup Date: Test: 0625

Analyst:

Client: COE-HOT GAS Adsorbent: Solvent: DCM LIMS Report Date: 02/15/96 Extract. Date: 02/09/96

	Client Name	hф	Initial	102	ike Fi	nal Final	Split	GPC *	c/D FACTOR
Sample No:	Client ID		WT/VOL	Mult. M	Mule. Vol				
96021,916-	COE-HOT GAS							:	c
מייי	ARTOTT - EXP / SV - R1 - CND	,		2.5		2.0	1.25	z	6.5
H \$00	IN OUT - EXP / SV - SB - ACE			2.5		2.0	1.25	z	2.5
	IN STATE OF THE ST			2.5		2.0	1.25	z	2.5
	A PRODUCTION OF THE PROPERTY O			2,5		2.0	1.25	z	2.5
	AFIOOI-EAF/SV-ALIE			25.0		2.0	12.5	z	25.0
021 H 022 H	TN/OUT-EXP/SV-AI-FA			25.0		2.0	12.5	z	25.0
:	COE-HOT GAS							:	c
H 600	AFTOIT - EXPLSU-R2COMP			2.5		5.0	1.25	z	0 1
H 600	Nerom-Expl.SV-R3COND			2.5		2.0	1.25	Z	2.5
H 600	AFIOUT EATER SV. BUCOND			2.5		2.0	1.25	z	2.5
014 H	AFIOUI-EAFLSV-BICOND			2.5		2.0	1.25	Z	2.5
				25.0		2.0	12.5	Z	25.0
027 н				2.5		.2.0	1.25	Z	2.5
028 н				25.0		2.0	12.5	z	25.0
H 620	AFIOUI-EAFISV-NS EN			2.5		2.0	1.25	z	2.5
030 H	AFTOOLS AND TOOL			25.0		2.0	12.5	z	25.0
н 160	ı			2.5		2.0	1.25	Z	2.5
	SBLNSO			2.5	2.5	2.0	1.25	N S	2.5
96LEU209-MB1 HZ	SBLKSO			2.5	2.5	2.0	1.25	Z	2.5

Comments:

500 UL ESU 71A @ 100/200 UG/ML 500 UL EMS 28 @ 100/200 UG/ML Surrogate: Spike:

Date Time Reason IOF Ifalister 	"humain"	
Date Time	36/51/6	
Received By	CiTantur	
Date Time	415/46 6:15P	•
Relinquished By	Amou	
Extracts Transferred	KIJA	

WESTON®

LC - GC - GC/MS EXTRACTABLES

Fliger	Test: _	¥ 330	M	leth	nod: _	৫৬০		Solver	n:	HEAD AAFTED:
		рН	Wt/Vo		Mult *	Mult	Vol (mL)	Split Mult	Í	or <u>LC</u> (Date/Time/Initials)
Block (7°C)	W		1 77	0	رسنز		pc10	2	N	Start time:
			1			سرمنز				End time:
	. 1 1 1		1		$\perp \perp$					BN Fraction (Date/Time/Initials)
	1 1 1		1					$\bot \bot$		Start time: ^/A
			i					1-1-		End time:
618(310			i				<u> </u>	<u> </u>	1	
								<u> </u>	1/	Extraction Information (Date/Analyst)
								 	<u> </u>	
								\swarrow	<u> </u>	Filtration:
							/	1	 	Boildown:
							<u> </u>			Blowdown:
										GPC Ready:
										GPC Cleanup:
			74	<u> </u>						GPC #:
			•/							After GPC Boildown:
										After GPC Blowdown:
		75								Acid/Florisil/Alumina Cleanup:
	/									Prep Sheet: Alaca = 1
	7									1
										GPC Lab ID #:
										Florisil Lot #:
				***						Florisii Lab ID #:
										* For Surr/Spike Mult, refer to
						1		\top		Table 1 / 2 / 3 (circle one)
	RFW # (ML) VOLT Blook (7%) Blook Spike (7%) C31 916- coof (580) - cc9 (330) - c13*(400)		RFW # (011) Mtrx pH Blosh (771) W Blink Spihe (771) W 031916- coof (580) - cog (330) - cog (400)	RFW # (ml) Mtrx pH WY/VO (c/ml. Block (7:2) w 1 Block Spike (712) 1 - c09 (330) 1 - c13*(400) i - c18(310) i	RFW # (ML) Mix pH Wixlol (9/ml) Blookh (772) W 1 770 Blookh Spike (772) 1 1 1 1 1 1 1 1 1	RFW # (m) Mtrx pH Wt/Vol Mult (g/m) * Slowh (70) w 170 100 Slowh Spine (70) 1 1 C21916 - coof (580) 1 - c13*(400) 1 - c18(310) 1	RFW # (ml) Mtrx pH Initial Wt/Vol Mult Mult (g/ml)	RFW # (ml) Mtrx pH Initial Surr Mult Vol (g/ml) = 1770 1.0	RFW # (m) Mtrx pH Initial Will Spike Mult Vol (mL) Spike Mult	RFW # (mL) Mtrx pH (g/mL) Mult Mult Vol (mL) Mult Y/N Slowh (72) w 1 770 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

45

WESTON®

LC - GC - GC/MS EXTRACTABLES

	2/7/96 Date: 2/7/96		E. des	etion Bo	tab #:	. 46	UCOI	14	SD	Logbook # 5055
xtra maly	st: Sand	Test:	2 33	Met	thod:	5000		Solve	nt: <u>-</u>	AAPrep:
	RFW #	Mtrx	рΗ	initial Wt/Vol (g/mL)	Surr Mult	Spike Mutt	Final Vol (mL)	Split Mult	GPC Y/N	Acid Fraction or Pest/PCB or LC (Date/Time/Initials)
1	9602L916-021	Air			10		100	<u>م</u>	N	Start time:
2	1 022	1						1	<u> </u>	End time:
3 !	024									BN Fraction (Date/Time/Initials)
4	026								Ц_	Start time:
5	Flank									End time:
6		V			V	0		1	V	
X.							V		,	Extraction Information
8		1								(Date/Analyst)
9 1		1								Filtration:
10 1										Boildown:
11 :										Blowdown:
12 1		 								GPC Ready:
13 1							-	<u> </u>		GPC Cleanup:
14 :		1		 						GPC #:
15 :					1					After GPC Boildown:
16 :										After GPC Blowdown:
17		 							1	Acid/Florisil/Alumina Cleanup:
18					-			 	<u> </u>	1
19		1/-			+					Prep Sheet 1 28 96
20	47	# \$						┼		GPC Lab ID #:
21 1		10			+	<u> </u>		-		Florisil Lot #:
22					-	 	<u> </u>	-		Florisil Lab ID #:
+		} 				 	-	 	-	
23 1		1			<u> </u>	 				* For Surr/Spike Mult, refer to Table 1 / 2 / 3 (circle one)
24 ¦		1				<u> </u>				Table 1/2/3 (citcle bite)
ori	gnal sande ON: 1550 2	0 + F 10.	Ita to	3-175	obor 6	<u>e</u> _p	inte	لكيد	RFU). See Coc for
	FF: 0950 2/1		<u> </u>						·	
	ato: 40,141020714	שונונו	a way	m Spik	. 1 2	5_1_1	161120	٤	.20	2 2 1 1 Mercan
		7 17	Sic =/	-/-				·	11.11	()
nis Pa	age Reviewed By/Date:	111:	~~ ·7:	-176e F	TOVIOWE	nisda be	st LIMS E	3V/DATE	=11-114	~ UNIC

WESTON®

LC - GC - GC/MS EXTRACTABLES

n Date:		Extra	action Bat	ch #:	51.11	کدی		_ SD	G File Y/N:
m. Threis	Test:	333	O Me	thod: _	280	E	Solver	t:	A Sid Fraction or Pest/PCB
RFW #	Vota Max		initial Wt/Vol (g/mL)	Mult	Spike Mult	Final Voi (mL)	Split Mult	Y/N	or <u>LC</u> (Date/Time/initials)
	(mL) (770) W		אָרי) ו	PI		10	3	N	Start time:
Black Salue					1	1	1-1-		BN Fraction (Date/Time/Initia
Black Sale	1550						1-1-	++-	II
46021963 - 004	(57d						1-1-	++	Start time:
,							++	++	and title.
1	+(10)			\prod		11	11	44	Extraction Information
	+(20)	1	11	III		1-	1	1	(Date/Analyst)
+	+(300)	+	1						ΙV .
		+		1				1	Filtration:
9 ı - 								1	Boildown:
0 i		-		_			1		Blowdown:
11			_						GPC Ready:
21				Val					GPC Cleanup:
13 1				\{\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	4				GPC #:
14			\(\ \ \ \	**					After GPC Boildown:
15 i			***************************************		\dashv	_			After GPC Blowdown:
16 i			- 						Acid/Florisil/Alumina Cleanu
17 :		_//							
18 i		4-				_			Prep Sheet: Maji 2
19 1	X								GPC Lab ID
20									Florisil Lot #:
21 1								_	Florisil Lab ID #:
221					-				* For Surr/Spike Mult, n
231									Table 1 / 2 / 3 (circ
24			1	1		1	L		

96021963-027 029 031 033 035	Mtrx Air	рН	Initial Wt/Vol (g/mL)	Surr Mult *	Spike Mult	Final Vol (mL)	Split Mult	GPC Y/N	Acid Fraction or Pest/PCB or LC (Date/Time/Initials)
029 031 033 V 035	Air			10					
029 031 033 V 035			!	_		100	2	2	Start time:
033 V 035				4				<u> </u>	BN Fraction (Date/Time/Initials)
Slank 035				Ц_					Start time:
Glank	1 1			Ш.			 		End time:
				11	<u> </u>				
				 		1	-		Extraction Information
1 65	1 1			11	10	V	17	177	(Date/Analyst)
					<u> </u>	<u> </u>	ļ	<u> </u>	Filtration:
				 			ļ		Boildown:
				<u> </u>					Blowdown:
				 			-	-	GPC Ready:
	<u> </u>			 			-		GPC Cleanup:
	<u> </u>			-		<u> </u>	-		GPC #:
				-	-			-	After GPC Boildown:
.\					-	-	-	-	After GPC Blowdown:
					 		-	-	Acid/Florisil/Alumina Cleanup:
1	<i>X</i>				ļ		┼		
3 1	1		ļ			-	-		Prep Sheet: 17886
) i	$\bot \downarrow$	_							GPC Lab ID #:
) i	$\bot \triangle$		<u> </u>				 	-	Rorisil Lot #:
li .	16	X 48	k		ļ		 		Florisii Lab ID #:
2 1		1/10	46			_	<u> </u>	 	
3 i		$\perp \lambda$	ļ			ļ	∔—		* For Surr/Spike Mult, refer to
									Table 1 / 2 / 3 (circle one)
ON 1430 Jaly 3FF 0830 2990	(6	umpost	tes						

LC - GC - GC/MS EXTRACTABLES

Logbook #: 5755

	RFW #	Mtrx	рН	Initial Wt/Vol (g/mL)	Surr Mult	Spike Mult	Final Vol (mL)		Split Mult	GPC Y/N	Acid Fraction or Pest/PCB or LC (Date/Time/Initials)
	6022 9 16-006	Sao		370	l		iO	$oldsymbol{\mathbb{L}}$	2	2	Start time:
2	-020	i		210					1		End time:
3 1	-023			240				\bot	1_		BN Fraction (Date/Time/Initials)
4 1	029			220				\perp		-	Start time:
51 9	6021963-026			240				4			End time:
- '	1 -028			210				\downarrow	_		
71	-030			180						4 +	Extraction Information (Date/Analyst)
8 1	-032			235				_		1 1	1
9 !	- 034			325						1-1	Filtration:
0				200					\bot	1-1	Boildown:
11	Blank spile	11	·	200		l		_	<u></u>	1 -	Blowdown:
21	Totale Spira	#					$oldsymbol{\perp}$	\exists			GPC Ready:
3 1											GPC Cleanup:
4 1							ab				GPC #:
15:						1/91	7				After GPC Boildown:
16		1			De.	7					After GPC Blowdown:
17				/	7						Acid/Florisil/Alumina Cleanup:
18				e v							a la la Car
19 i		17									Prep Sheet: 2/9/96 692
20 1		10	7								GPC Lab ID #:
21 1		1									Florisii Lot #:
22 1		1	1		T						Florisil Lab ID #:
23	/-	+			+						* For Surr/Spike Mult, refer t
		-			十						Table 1/2/3 (circle on
24	NTS: DCW/AC All Initial Water in	velus	un to	be loss	ed u	n as				i tal	⁷ ~ .
	WATCH	· Or .	,			1					
	10: Soul 4102	400	1. TADAR	2 1 9	nike:	461	17.9	B	1	25 u	£ Witness:

WESTON® LC - GC - GC/MS EXTRACTABLES

,,,				, - (G	<i>,</i> - (3U,	/ mc		ını	40			Logbook #: 5158
Evtract	Date: 2/9/96			E	Extr	actio	n Ba	tch #	: 96L	EC	ac	9	_ SD	G File (YVN: <u>Arm 2//</u>
Analyst	: BN	Tes	t: .	<u>০</u>	25	H	Me	thad.	Sec	/ .		Solver	nt: <u>D</u>	M AAPrep: <u>D.O 2/9</u>
		T	T			Inji	nal 7	Surr	Spike	<u> </u>	nal	Split	GPC	Ī
ľ	RFW #	Mtr	×	pH	! /4_	y r t/ (g/i	Vol mL)	Mult *	Mult	1	ol nL)	Mult	Y/N	Acid Fraction or Pest/PCB or LC (Date/Time/Initials)
119	16022916-004	W	,	37	_	N/	A	2.5		2	.0	1.25	N	Start time:
21	-006	1	1		1	1	ſ	1				1	1	End time:
31	-009		7		1									BN Fraction (Date/Time/Initials)
41	-020	11			1			1				F		Start time:
51	-021	11	1		T			25		П		12,5		End time:
61	-022	11	†		1			I		П		1		
719	6021963-004		1	7	1			25		П		1,25		Extraction Information
81	-009	Π	7					,		П		′, -		(Date/Analyst)
9 !	-014	T	1							П				Filtration: 2/9/96 Qu
10 1	-026	\sqcap	1		T			1		П		L		Filtration: 2/4/46 Qu. Boildown:
11 1	-027	\sqcap	†		7			25		IT		12,5		Blowdown: 8 16 96 100
12	-028	Π	†		1			25				1,25		GPC Ready:
13	-029	\sqcap	1					25				125		GPC Cleanup:
14 1	-030	H	†	\dashv				2.5				1.25	\neg	GPC #:
15 1	-031	Π	†	ユ		2/4/8		25				12.5		After GPC Boildown:
16	Plank	\sqcap	†	77.e		100		2,5				1,25		After GPC Blowdown:
17 1	BS	\sqcap	\dagger	1	Ť	1	7		2,5	1		1		Acid/Florisil/Alumina Cleanup:
18 1	850	1	十	1	1	1		1	Ī	上	_	4	士	
19 1 -	1000		#							H				Prep Sheet: AND 2/10/
20			†								_			GPC Lab ID #:
21 1			t	29	96									Florisil Lot #:
22			才	<u> </u>										Florisil Lab ID #:
23			1										-	* For Surr/Spike Mult, refer to
24		 	#					-						Table (1)/2/3 (circle one)
			Ų	ېۋىر	1	!		<u> </u>	l	<u> </u>				
COMMEN														in septunnel
R	evision of 1	te		pse,	os	heet	t, 13	efle	cting	, 4	Ine	_al	ique	to laken from
	Ome and 100	nu		E	<u>.</u> :	5 1	<u>/</u>	exp	losi	ve.	es	ctrac	ts.	was performed
	n 2/14/96 by	LD	کـ			_	٠.		Kuck			٥.	ച്	414/96
	• • 0													1 1
Surrogate	= 500uL 7/88 E	<u>SUT</u>	7	IA	<u>33)</u>	750	Spik	e: <u>50</u>	anl	7/8	8 <u>E</u>	nis.	3117	202@/00-360-360-3/mL Witness:
This Page	e Reviewed By/Date:	Sm		2/10 2/10	e [94		leviews	d Again	st LII	MS B	By/DATE	:_10	m 2/16/9C
				•	•								•	- ,

V	1	F	S	T	റ	١	le
		_	J		v		w

LC - GC - GC/MS EXTRACTABLES

WESTON	L	C - GC	: - GC	/MS	EXI	RAC	LAB	LES	Logbook #:
Extract Date: 2/14/96		Extra	action Ba	tch #:	961	E 0.	236	_ SD	G File &YN: Ama 2 14/9 M AAPrep: Amb 2/15/4
Analyst: M T	Test:	0625 H	Me	thod: _	SEPT		_ Solve	nt: <u>Da</u>	M ΑΑΡτερ: [1/10] λ [15] 5
RFW #	Mtrx	pН	Initial Wt/Vol (g/mL)	Surr Mult	Spike Mult	Final Vol (mL)	Split Mult		Acid Fraction or Pest/PCB or LC (Date/Time/Initials)
	air	1/0	N/A.	10.2	114146		7 1.25	1/	
1 9602 1916-013	144	NA	N/A	2,5		1	1, 25		Start time:
010	+ *			25			12.5	1	BN Fraction (Date/Time/Initials)
3: 024	++			25			12.5		Start time:
51 023	+//			2.5			1.25	+ +	End time:
6 025	+/			2,5			1.25	FT	
7: 963-019	+(-						1.25		Extraction Information
8: 1-024	+			1 1 11			1. 25	_	(Date/Analyst)
9: - 032	++			1			1.25		Filtration: 2/14/96 N.1
10 -033	++)			25			/2.5	11	Boildown: 2/14/96 DW
111 - 034	++/			2,5			1.25	+	Blowdown: 2/15/56 0.0
121 - 035	+ +			25			12.5	1	GPC Ready:
13 Blank				2,5			1. 25	1	GPC Cleanup:
141 B3	++				1.02	5	1,25	1	GPC #:
15 BSD	1		1		1.0	25	1,25	1 1	After GPC Boildown:
161	#			*	*	D.O. 2	114/96		After GPC Blowdown:
17 1	0.0. 2114	04						1	Acid/Florisil/Alumina Cleanup:
18:	13/19						7		
19 :			14						Prep Sheet: D.O. 2/15/96
20 1			13/						GPC Lab ID #:
21 :	1	2	1						Florisil Lot #:
21	1								Florisil Lab ID #:
231									* For Surr/Spike Mult, refer to
24			+					-	Table \$ 2/3 (circle one)
Out 1	^ /	1 16 M	12/1/50	<u> </u>	1	4 -			
COMMENTS: PHE	Mi e	1 41	10/v=e	Way	m	s 1 -	app1	icabol	i according to
Schedilin.		M1	2/14	196	1	Sai	uple	Sa	re air - therefore
		t. VO							414/96.
* Sur. and spike	mu	etiplic	x chai	rped	to a	ccom	GC/M	s SVO	A calculations per S. Du
33117501		,							- Carland III
Surrogate: 500 ILESUT		<i>'</i> .	,						802(0) Witness: 100
This Page Reviewed By/Date:	D.O.	2/15/9	36	Review	ed Agai	inst LIM	S By/DAT	re: 👍	m 2/6/96
DDM 04 04 040/7 11/03									Page # 63



END OF DATA PACKAGE

457 CHAMA 458

Roy F. Weston, Inc. - Lionville Laboratory VOST ANALYTICAL DATA PACKAGE FOR COE-HOT GAS

DATE RECEIVED: 02/02/96 RFW LOT # :9602L915

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
AFTOUT-VOST-R1-TP1F	001	AI	96LVX020	01/31/96	N/A	02/07/96
AFTOUT-VOST-R1-TP1B	002	AI	96LVQ015	01/31/96	N/A	02/10/96
AFTOUT-VOST-R1-TP2B	004	AI	96LVQ015	01/31/96	N/A	02/10/96
	005	AI	96LVX020	01/31/96	N/A	02/07/96
AFTOUT-VOST-R1-TP3F	005	AI	96LVQ014	01/31/96	N/A	02/09/96
AFTOUT-VOST-R1-TP3B	007	AI	96LVX020	01/31/96	N/A	02/07/96
AFTOUT-VOST-R1-TP4F	007	AI	96LV0014	01/31/96	n/A	02/09/96
AFTOUT-VOST-R1-TP4B		AI	96LVX020	01/31/96	N/A	02/07/96
AFTOUT-VOST-R1-TP5F	009	AI	96LVQ014	01/31/96	N/A	02/09/96
AFTOUT-VOST-R1-TP5B	010	AI	96LVQ014	01/31/96	N/A	02/09/96
AFTOUT-VOST-R1-TP6B	012	AI	96LVX020	01/31/96	N/A	02/07/96
AFTOUT-VOST-BT-TP1F	013	AI	96LVQ014	01/31/96	N/A	02/09/96
AFTOUT-VOST-BT-TP1B	014	W	96LVK031	01/31/96	N/A	02/09/96
AFTOUT-VOST-R1-COND	015		96LVK031	01/31/96	N/A	02/09/96
OUT-VOST-SB-COND	016	W	APT/V/02T	01/31/96	N/A	02,00,00
LAB QC:						
						((
VBLKRC	MB1	IA	96LVX020	N/A	N/A	02/07/96
VBLKRC	MB1 E	as AI	96LVX020	N/A	N/A	02/07/96
VBLKRU	MB1	IA	96LVQ015	N/A	N/A	02/10/96
VBLKRV	MB1	IA	96LVQ014	N/A	N/A	02/09/96
VBLKRV	MB1 E	ss AI	96LVQ014	•	N/A	02/09/96
VBLKRO	MB1	W	96LVK031	N/A	N/A	02/09/96
VBLKRO ·	MB1 E	ss W	96LVK031	N/A	N/A	02/09/96

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	В.	Miscella		602

CHAIN OF CUSTODY

700 MPS [998 | 5123 | 477 | 424, 4,94 2) Unbroken on Oùler Package Y or (N 4) Unbroken on Sample Y or (A COC Record Present Upon Sample Rec't 3) Present on Sarpele Y or ((A) MISSING IN COC Tape was:

1) Present on Outer
Package Y or A ₽ **WESTON Analytics Use Only** #OSSOP £03506 4 0350 40517 HOLY 2) Ambient or Chilled 4) Labels Indicate
Properly Preserved 5) Received Within Holding Times 3) Received in Good Condition (Y) or N 1) Shipped or Hand Delivered Ref# LA Cooler# WESTON Analytics Life, Only Airbill # $V_{\rm cn}$ INORG × Metal Samples Labels and COC Record? Y or NOTES: Custody Transfer Record/Lab Work Request Discrepancies Between Sperite 4 003, L11 000 L378 X AΚ S Herp tog from Pest/ 2) 20 99 Carrelled 45 3: Time L 6. SURBY 96 VT 015 L377 AN8 Scuring 2.2 96 Date AOV Date Time Collected Collected Liquid Solid Liquid 100000 1375 Special Instructions: ANM DE TENT FINAT KHOOL STRATELY Received by カガス #/Type Container DATE/REVISIONS ANALYSES REQUESTED Preservatives Refrigerator# Volume Matrix L373 Relinquished by Ť Matrix QC Chosen (<) MS MSD E. 0, x be-16-AFRAT-1055-RI-CLAD L372 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS 10E-H6-1410J-105J-RI-TP 14 106-H6-ATTUK-W5-R1-TF 1.61/20-16-18 MATUT-108-RI-176 14 14-1K-1HTUX-WS-KI-IP3 Est. Final Proj. Sampling Date
Work Order # 22281-013-042 -1200 SINF-HG-AFFER TWS-OF-TPS 10 16 CE-HEARTH TUST RI-TPA Time role Horgas OC STD Delicate TAT CAT Cilent ID/Description 5/0/02 / Ethe Method 5040/8240 Date Project Contact/Phone # 4 Chel Received by WESTON Analytics Use Only Cilent (02 - 1101 31677096 9 ₽ RFW 21-21-001/A-7/91 Relinquished Se. Soil Section of Soil Soil of Soil Liquids EP/TCLP Leachate Date Rec'd __ 7 Account # MATRIX CODES: . ¥×r

DATA SUMMARY

Roy F. Weston, Inc. - Lionville Laboratory VOST TUBE BY GC/MS

	KOY F. ME	BCOM, inc Lio Voet Tibe by	LIONVILLE LABORATOR	atory	Bonowt Dato.	00.11.30/00/00
RFW Batch Number: 9602L915	Client: COE	COR-HOT GAS	20/20	Work Order: 02281012012	Page: 1	77:11 07 /07 /70 E
Cust ID:	AFTOUT-VOST-	AFTOUT-VOST-	AFTOUT-VOST-	AFTOUT-VOST-	AFTOUT-VOST-	AFTOUT-VOST-
	R1-TP1F	R1-TP1B	R1-TP2B	R1-TP3F	R1-TP3B	RI-TP4F
Sample RFW#:	001	003	004	900	900	90
Information Matrix:	AIR	AIR	AIR	AIR	AIR	AIR
D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
Units:	total ng	total ng	total ng	total ng	total ng	total ng
Toluene-d8	102 %	\$ 62	87 %	104 \$	\$ 96	109 %
Surrogate Bromofluorobenzene	112 %	117 \$	113 %	116 %	130 %	118 %
Recovery 1,2-Dichloroethane-d4	109 %	84 4.	93	103 %	* 66	113 %
Chloromethane	0 06 P		100		530	
Way Chloride			50 U	0 0 C	വ	n 05
Chloroethane	-	50 U	50 U	50 U	50 U	50 U
Methylene Chloride	_ 16 JB		21 JB			12 JB
Acetone	EXI EXI	2400	360 J	1400	500 U	2000
Carbon Disulfide	_ 25 U	25 U	25 U	25 U	25 U	25 U
1,1-Dichloroethene	_ 25 U	25 U	25 U	25 U	25 U	25 U
1,1-Dichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethene (trans)	25 U	25 U	25 U	25 U	25 U	25 U
Chloroform	25 U	25 U	25 U	25 U	25 U	25 U
1,2-Dichloroethane	25 U	25 U	25 U	25 U	25 U	25 U
2-Butanone	200 U	200 U	200 U	200 n	200 U	200 U
1,1,1-Trichloroethane	_ 25 U	25 U	25 U		25 U	25 U
Carbon Tetrachloride	_ 25 U	25 U	25 U	25 U	25 U	25 U
Vinyl Acetate	100 U	100 U	100 U	100 U	100 U	100 U
Bromodichloromethane	25 U	25 U	25 U		25 U	25 U
1,2-Dichloropropane	25 U	25 U	25 U	25 U	25 U	25 U
cis-1,3-Dichloropropene	25 U	25 U	25 U		25 U	25 U
Trichloroethene	25 U	25 U	25 U	25 U	25 U	25 U
Dibromochloromethane	25 U	25 U	25 U	25 U	25 U	25 U
1,1,2-Trichloroethane	25 U	25 U		25		25
Benzene	91 B	B JB			8 JB	
Trans-1, 3-Dichloropropene	25 U	25 U	25 U	25 U	25 U	25 U
Bromoform	25 U	25 U	25 U	25 U	25 U	25 U
4-Methyl-2-pentanone	200 U	200 U	200 U	200 U	200 U	200 U
2-Hexanone	200 U	200 U	200 U	200 U	200 U	200 U
Tetrachloroethene	25 U	25 U	25 U	25 U	25 U	25 U
1,1,2,2-Tetrachloroethane	25 U	25 U	. 25 U	25 U	25 U	25 U
*= Outside of EPA CLP QC limits.						

		1	2() ()	}
	<u>.</u>		B	D	1
7	AFTOUT-VOST- R1-TP4F	004	39 B	25	11 00
01	T.	10	ŋ	n	11
Page: 1b	AFTOUT-VOST R1-TP3B	900	2	25	L
012	 		В	n	:
Work Order: 02281012012 Page: 1b	AFTOUT-VOST- AFTOUT-VOST- R1-TP3F R1-TP3B	002	27	25	
rde	- 8		ņ	D	:
Work C	AFT	400	7	25	100
	3T- 1B	~	10 J	Ω	
Client: COE-HOT GAS	AFTOUT-VOST- R1-TP1B	007	10	25	
HOT-	3T- LF		B	D	:
lient: COR	Cust ID: AFTOUT-VOST-	100	40	25	
ົບ	ID:	RFW#:			
	ust	R			
RFW Batch Number: 96021915	ט				
Number:				Chlorobenzene	
atch			ne	oben	
W.			Toluene	llor	
RI	ļ		ΙĔ	บ	Ì

)))))		i))) }))			
Toluene		40	В	10		7	J.	27	В	5		39	-
Chlorobenzene		25	Ω	25		25	n	25	D	25		25	_
Ethylbenzene		25	n	25	Ω	25	Ω	25	D	25	n	25	_
Styrene		17	ט	25		25	Ω	9	ט	25		12	_
Xylene (total)		38		25		25	D	13	ט	25		28	
2-chloroethylvinylether		100 U	n	100		100	Ω	100	D	100		100	-
*= Outside of EPA CLP OC limits	ts.	,											

Lionville Laboratory Roy F. Weston, Inc. Lionville VOST TUBE BY GC/MS

Report Date: 02/20/96 14:29

Work Order: 02281012012 Page: Client: COE-HOT GAS RFW Batch Number: 9602L915

	15:0	SOUTH TOTAL TOTAL	Ē	TOOM THOUSE	- #- BOOK - ##10###	- FROUL THOTAG	TOOM THIO THE	- TOOM - THOUSE	
				R1-TP5F	R1-TP5B	R1-TP6B	BT-TP1F	BT-TP1B	3 C
Sample	RFW#:	800		600	010	012	013	014	0
Information	Matrix:	AIR		AIR	AIR	AIR	AIR	AIR	
	D.F.:	1.00	.0	1.00	1.00	1.00	1.00	1.00	
	Units:	total ng	מ	total ng	total ng	total ng	total ng	total ng	
	Toluene-d8	106	عن	111 \$	118 %	137 \$	97 \$	125 \$	l
Surrogate Bromofl	Bromofluorobenzene	171 *	оķо	133 %	189 * \$	219 * \$	114 %	112 %	
	1,2-Dichloroethane-d4	109	40	115	112 \$	130 %	102	100	
12			=£1==	[]====================================		Teessasses []			٤ı
Chloromethane		,	田	50 U	M	1800 B	50 U	270 B	
Bromomethane		120		50 U	400	420	S JB	36 J	_
Vinyl Chloride		20	D	50 U	50 U	20 U	50 U	20 U	_
Chloroethane		20	D	50 U	50 U	20 U	20 U	50 U	_
Methylene Chloride		23	JB	6 JB	3 19 BJ		12 JB	25 ป	JB
Acetone		200	n	1700	610	200 U	200 U	200 t	_
Carbon Disulfide		25	Þ	25 U	25 U	25 U	25 U	25 U	_
1,1-Dichloroethene		_ 25	Þ	25 U	25 U	25 U	25 U	25 U	_
1,1-Dichloroethane		25	Þ	25 U	25 U	9	25 U	25 U	_
	(trans)	25	Þ	25 U	25 U	6 д	25 U	25 U	_
Chloroform		25	Þ	25 U	25 U	8 J	25 U	25 U	_
1,2-Dichloroethane		25	D	25 U	25 U	25 U	25. U	25 U	_
2-Butanone		200	n	200 U	200 U	200 U	200 U	200 U	_
1,1,1-Trichloroethane		25	Ω	25 U	25 U	6 G	25 U	25 U	_
Carbon Tetrachloride		_ 25	D	25 U	25 U	6 J	25 U	25 U	_
Vinyl Acetate		100	Ω	100 U	100 U	100 U	100 U	100 U	_
Bromodichloromethane		25	D	25 U	25 U	p 6	25 U	25 U	_
1,2-Dichloropropane		25	Ω	25 U	25 U	10 J	25 U	25 U	_
cis-1,3-Dichloropropene	le	25	Ω	25 U	25 U	8 J	25 U	25 U	_
Trichloroethene		25	Þ	25 U	25 U	12 J		25 t	_
Dibromochloromethane		25	ם	25 U	25 U	25 U	25 U	25 t	_
1,1,2-Trichloroethane_		25	n	25 U	25 U	17 J	25 U	25 บ	_
Benzene		6	JB	62 B	5 BJ	J 13 JB	34 B	25 t	_
Trans-1,3-Dichloropropene	ene	25	D	25 U	25 U	25 U	25 U	25 เ	_
Bromoform		25	n	25 U	25 U	25 U	25 U	25 U	1
4-Methyl-2-pentanone		200	n	200 U	200 U	500 U	200 U	1. 005	_
2-Hexanone		200	n	500 U	200 U	200 U	200 U	200 C	
Tetrachloroethene		25	n		25 U	6 д	25 U	25 U	_
1,1,2,2-Tetrachloroethane	nane	25	n	25 U	25 U	25 U	25 U	25 U	
*= Outside of EPA CLP QC limits	QC limits.								

RFW Batch Number: 9602L915 Client: COE-HOT GAS	C1	ient: COB-F	HOT		Work Or	der: 022	81012012	Work Order: 02281012012 Page: 2b		
Cu	ust ID:	aftout-vost	Ė	Cust ID: AFTOUT-VOST- AFTOUT-VOST-	AFTOUT-VOST	- AFTOU	T-VOST-	AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST-	AFTOUT-VOST-	- I
		R1-TP41	8	R1-TPSF	R1-TP5B	æ	R1-TP6B	BT-TP1F	BT-TP1B	æ
	RFW#:	008		600	010		012	013	014	
										6
		Ŋ	ט	31 B	4	h	12 J	15 JB	٠	0
Chlorobenzene		25	D	25 U	25	5	10 J	25 U	25	25 U
Ethylbenzene		25	D	25 U	25	5	7 J	25 U	25	n
		25	Þ	p. 6	25	ם	98 J	25 U	25	Ω
Xylene (total)		25	D	. 25	4	ь	20 J	11 J	25	D
2-chloroethylvinylether		100	Þ	100 U	100	5	100 U	100 U	100	n
*= Outside of EPA CLP QC limits	imits.									

Lionville Laboratory Roy F. Weston, Inc. Lionville VOST TUBE BY GC/MS

Report Date: 02/20/96 14:29 Work Order: 02281012012 Page: 3a Client: COR-HOT GAS RFW Batch Number: 96021915

RFW#: 015 Matrix: WATER D.F.: Ug/L Units: ug/L Toluene-d8 102 Bromofluorobenzene 95 1.2-Dichloroethane-d4 91	15 R						Ţ
MATE 19 19 19 19 19 19 19 19 19 19 19 19 19	œ	016	96LVX020-MB1	96LVX020-MB1	96LVQ015-MB1	96LVQ014-MB1	Q
ug 102 95		WATER	AIR	AIR .	AIR	AIR	
102 95	.00	1.00	1.00	1.00	1.00	1.00	
	/r	ng/L	total ng	total ng	total ng	total ng	
	مد	107 \$	108	109 %	127 \$	122	مد
	مد	100	102 %	3 66	101	120	مد
	مد	3 96	105	107 %	* 86	115	امد
11	===£1===	[J======:	[] nerennennent]========[[]assassassassas]		E]
10	O 0	10 U	50 U	20 U	50 U	49	ь
10	D 0	10 U	32 J	18 JB	3 50 U	50	5
10	n o	10 U	50 U	. 20 U	50 U	50	ם
10	D 0	10 U	50 U	20 U	50 U	20	Þ
	5 B	3 JB	3 10 J	. 11 JB	8 57	29	
40	0	10 U	200 U	200 U	200 U	200	5
	5 U	5 U	25 U	25 U	25 U	25	ם
	5 U	5 U	25 U	93 %	25 U	25	Þ
	2 n	5 U	25 U	25 U	25 U	25	ם
(trans)	5 U	5 U	25 U	7 25 U	25 U	25	ם
	3 Л	S	25 U	7 25 U	25 U	25	b
	2 N	5 U	25 U	1 25 U	25 U	25	ם
10	n o	10 U	200 U	1 500 U	200 U	200	ם
1,1,1-Trichloroethane	D 2	5 U	25 U	ı 25 U	25 U	25	ם
Carbon Tetrachloride	5 U	5 U	25 U	7 25 U	25 U	25	ם
1(D 0.	10 U	100 U	I 100 U	100 U	1001	ם
Bromodichloromethane	2 n	S U	25 U	r 25 U	25 U	25	5
1,2-Dichloropropane	2 N	5 U	25 U	r 25 U	25 U	25	ם
cis-1,3-Dichloropropene	5 U	2 U	25 U	r 25 U	25 U	25	ם
1	5 U	5 U	25 U	106	25 U	25	ם
Dibromochloromethane	5 U	5 U	25 U	1 25 U	25 U	25	D
1,1,2-Trichloroethane	2 n	5 U	25 U	7 25 U	25 U	25	ם
	2 n	5 U	6 J	102 🕏	11 J	60	ם
Trans-1,3-Dichloropropene	5 U	5 U	25 · U	J 25 U	25 U	25	b
	5 U	5 U	25 U	1 25 U	25 U	25	b
4-Methyl-2-pentanone	Ω 01	10 U	200 U	r 500 U	200 U	200	b
7	D 01	10 U	200 n	1 500 U	200 U	200	ם
	2 O	5 U	25 U	J 25 U	25 U	25	D
1,1,2,2-Tetrachloroethane	2 Q	5 U	25 U	J. 25 U	25 U	25	D

		I	Ţ	()					
		1-MB1	25 UL	25 U	25 U	25 U	25 U	100 U	
	VBLKRV	96LVQ014-MB1		•	••	••	••	Ä	
		181 9	D	D	Ω	Ω	n	n	
3b	Þ	015-M	25	25	25	25	25	100	
Page	VBLKRU	бат96							
2012		MB1	مبن	من	Þ	Þ	D	D (
Work Order: 02281012012 Page: 3b	VBLKRC BS	96LVX020-MB1 96LVX020-MB1 96LVQ015-MB1	108	112	25	25	25	100	
Order		KB 1	ה	D	Þ	n	D	n	
lork	ວ	1020-	5	25	25	25	25	100	
3	VBLKRC	96LV3							
	3B-	10	þ	D	D	ם	n	n	
GAS	Cust ID: AFTOUT-VOST- OUT-VOST-8B-	COND 016	5	S	Ŋ	ß	5	10	
-HOT	ST-	ND 5	Þ	n	ם	D	D	D	
Client: COR-HOT GAS	TOUT-VO	R1-COND 015	2	S	<u>រ</u>	2	5	10	
Clie	D: A	 #							<i>:</i>
	ust I	RFW#:							imite
11915	บ							ır	0C J
9602						ļ		lethe	CLP
RFW Batch Number: 9602L915							1	2-chloroethylvinylether	*= Outside of EPA CLP QC limits.
h Nur				nzene	zene	, 	tota	ethy	de o
Batc			Toluene	Chlorobenzene	Ethylbenzene	Styrene	Xvlene (total)	hloro	Outsi
R W			Toll	Chlc	ETH	2	X	2-C	#

Roy F. Weston, Inc. Lionville Laboratory

VOST TUBE BY GC/MS Repr Client: COE-HOT GAS Work Order: 02281012012

RFW Batch Number: 96021915

Report Date: 02/20/96 14:29

Page:

96LVK031-MB1 1.00 ng/L WATER VBLKRO BS 96LVK031-MB1 1.00 ng/I VBLKRO RFW#: 96LVQ014-MB1 1.00 total ng Cust ID: VBLKRV BS D.F.: Units: Matrix: Information Sample

 $f_{ ext{n}}=======f_{ ext{n}}====f_{ ext{n}}$ 115 114 99 25 500 25 25 100 25 25 25 26 25 25 25 25 500 500 25 500 25 108 Bromofluorobenzene 1,2-Dichloroethane-d4 Toluene-d8 1,1,2,2-Tetrachloroethane 1,2-Dichloroethene (trans) Trans-1, 3-Dichloropropene cis-1,3-Dichloropropene 1,1,1-Trichloroethane 1,1,2-Trichloroethane 4-Methyl-2-pentanone Bromodichloromethane Dibromochloromethane Carbon Tetrachloride 1,2-Dichloropropane 1,2-Dichloroethane 1,1-Dichloroethene 1,1-Dichloroethane Methylene Chloride Tetrachloroethene Carbon Disulfide Trichloroethene Vinyl Chloride Vinyl Acetate Chloromethane Chloroethane Bromomethane 2-Butanone 2-Hexanone_ Chloroform Bromoform Surrogate Recovery Benzene Acetone

*= Outside of EPA CLP QC limits.

UIS

Client: COE-HOT GAS Cust ID: VBLKRV BS

RFW Batch Number: 96021915

VBLKRO

RFW#: 96LVQ014-MB1 96LVK031-MB1 96LVK031-MB1

01|3

108 105

25 25 25 100

*= Outside of EPA CLP QC limits.

2-chloroethylvinylether

Styrene Xylene (total)

Chlorobenzene Ethylbenzene_

Toluene

96

VBLKRO BS

CASE NARRATIVE



LIONVILLE LABORATORY ANALYTICAL REPORT

Client: COE-HOT GAS RFW #: 9602L915 W.O #: 02281-012-012-1200-00 Date Received: 02 February 1996

GC/MS VOLATILE

The set of samples consisted of two (2) water samples and seven (7) air samples collected on VOST cartridges {i.e., pairs - front (tenax) and back (tenax/charcoal)} on 31 January 1996.

The samples were analyzed according to criteria set forth in SW 846 Method 5040/8240 for Volatile Organic target compounds on 07,09,10 February 1996.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. The analyses of samples AFTOUT-VOST-R1-TP2F and AFTOUT-VOST-R1-TP6F were lost due to an instrument malfunction. A copy of the Sample Discrepancy Report (SDR) has been included in Section I (Case Narrative).
- 2. The required holding time for analysis was met.
- 3. Non-target compounds were detected in these samples.
- 4. Three (3) of sixty-three (63) surrogate recoveries were outside QC limits.
- 5. All blank spike recoveries were within QC limits.
- 6. The method blanks contained the common contaminant Methylene Chloride at levels less than 3x the CRQL. The air method blanks also contained the target compound Benzene at levels less than the CRQL; the method blank 96LVX020-MB1 also contained the target compounds Bromomethane and Toluene at levels less than the CRQL; and the method blank 96LVQ014-MB1 also contained the target compound Chloromethane at a level less than the CRQL.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 372 pages.

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- 7. All internal standard area and retention time criteria were met.
- 8. The calibration data has been reported using CLP Forms 6 and 7; however, VOST calibrations should not be expected to meet the calibration criteria specified on these forms.
- 9. The sample IDs were modified (truncated) to accommodate EPA nomenclature, which allows twenty (20) characters. The IDs were additionally truncated on some forms and the final character, which distinguished front from back, was deleted; in these cases, the odd RFW #s (e.g., 001, 003) represent the front(tenax) and the even RFW #s represent the back (tenax/charcoal).

Bruce C. the Hu west fender

Vice President and Laboratory Manager

Lionville Analytical Laboratory

2-2196

Date



GLOSSARY OF VOA DATA

DATA QUALIFIERS

- U = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I = Interference.
- NQ = Result qualitatively confirmed but not able to quantify.
- N = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y = Additional qualifiers used as required are explained in the case narrative.



GLOSSARY OF VOA DATA

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions

and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.



TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP Missed Peak: manually added peak not found by automatic quan program.
- PA Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

WESTON® Sample Discrepancy Report (SDR)	SDR #: 460(2)5
Initiator: They B Sm. 44 RFW Batch: 9LCQL915 Date: 2/8/96 Samples: -003 -011 Client: CE - Hot Gas Method: SW846/MCAWW/CLP/	Parameter: INS VER Matrix: Air Prep Batch:
a. COC Discrepancy Tech Profile Effor Wrong Test Code C Transcription Error Wrong Test Code C b. General Discrepancy Wrong S	Jample Pulled Label ID's Illegible Received Past Hold Received Past Hold
Re-extract Re-digest Revise EDD Change Test Code to Place On/Take Off Hold (circle)	analysis to another and Called for Service
4. Project Manager Instructionssignature/date. Concur with Proposed Action Disagree with Proposed Action; See Instruction Include in Case Narrative Client Contacted; Date/Person XX DIVIN 2/14/94 Add Cancel SUMMUA 00 3 011	
5. Final Actionsignature/date: Verified re-[log][leach][extract][digest][analysis] (circle) Included in Case Narrative Hard Copy COC Revised Electronic COC Revised EDD Corrections Completed When Final Action has been recorded, forward original to QA Specialis	16 96 by the Magraces
D Distanti	oution of Completed SDR
X Initiator Set Smith	etals: Reichner/Doughty organic: Perrone/Leonards
X Lab Manager: J. Michael Taylor	organic: Perrone/Leonalds C/LC: Jarvis/Skrzat/Schnell S: LeMin/McIntyre/Taylor/Kasdras/Steele og-in: Geiger DD: Miller dmin: Brewer/Keehn/Edgington ther:

QC SUMMARY

AIR VOLATILE SURROGATE RECOVERY

Contract: 02281-012-012-1200 Lab Name: ROY F. WESTON

SDG No.: 9602L915 SAS No.: Case No.: Lab Code:

				<u></u>		
	EPA	Sl	S2	S3	OTHER	TOT
	SAMPLE NO.	(DCE)#	(TOL)#	(BFB)#		OUT
	=======================================	=====	=====	=====	=====	===
01	VBLKRC	105	108	102		0
02	VBLKRCMS	107	109	99		0
03	AFTOUT-VOST-R1-TP1F	109	102	112		0
04	AFTOUT-VOST-R1-TP3F	103	104	116		0
05	AFTOUT-VOST-R1-TP4F	113	109	118		0
06	AFTOUT-VOST-R1-TP5F	115	111	133		0
07	AFTOUT-VOST-BT-TP1F	102	97	114		0
08	VBLKRV	115	122	120		0
09	VBLKRVBS	96	111	93		0
10	AFTOUT-VOST-BT-TP1B	100	125	112 ,		0
11	AFTOUT-VOST-R1-TP6B	130	137	219*		1 1
12	AFTOUT-VOST-R1-TP5B	112	118	189*		1 1
13	AFTOUT-VOST-R1-TP4B	109	106	171*		
14	AFTOUT-VOST-R1-TP3B	99	96	130		0
15	VBLKRU	98	127	101		0
16	AFTOUT-VOST-R1-TP2B	93	87	113		0
17	AFTOUT-VOST-R1-TP1B	84	79	117		0
18						
19		l				
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28						
29						
30						
	I 					

QC LIMITS

S1 (DCE) = 1,2-Dichloroethane-d4
S2 (TOL) = Toluene-d8
S3 (BFB) = Bromofluorobenzene (50-150) (50-150)(50-150)

- # Column to be used to flag recovery values
- * Values outside of contract required QC limits
- D Surrogates diluted out

page 1 of 1

FORM II VOA-1

WATER VOLATILE SURROGATE RECOVERY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-1200

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L915

					OTHER	TOT
	EPA	S1	S2	S3	OTHER	
	SAMPLE NO.	(DCE)#	(TOL)#	(BFB)#		OUT
	SAMPLE NO:	=====	=====	=====	=====	===
	=======================================	90	99	90		0
01	VBLKRO	98	98	93		0
02	VBLKROMS	90	102	95		0
03	AFTOUT-VOST-R1-COND	91		100		ol
04	OUT-VOST-SB-COND	96	107	100		٦
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QC LIMITS

(76-114) (88-110)

S1 (DCE) = 1,2-Dichloroethane-d4 S2 (TOL) = Toluene-d8 S3 (BFB) = Bromofluorobenzene (86-115)

Column to be used to flag recovery values

* Values outside of contract required QC limits

D Surrogates diluted out

page 1 of 1

FORM II VOA-1

FORM 3 AIR VOLATILE BLANK SPIKE RECOVERY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-1200

Lab Code: Case No.: SAS No.:

SDG No.: 9602L915

Matrix Spike - EPA CLP PR Sample No.: VBLKRC

COMPOUND	SPIKE	BLANK	BS	BS	QC.
	ADDED	CONCENTRATION	CONCENTRATION	%	LIMITS
	(ng)	(ng)	(ng)	REC #	REC.
1,1-Dichloroethene Trichloroethene Benzene Toluene Chlorobenzene	500.00	0.0000	467.02	93	59-172
	500.00	0.0000	529.47	106	62-137
	500.00	6.051	518.39	102	66-142
	500.00	5.406	545.64	108	59-139
	500.00	0.0000	, 562.25	112	60-133

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS:				***	

FORM 3 WATER VOLATILE BLANK SPIKE RECOVERY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-1200

Lab Code:

Case No.: SAS No.:

SDG No.: 9602L915

Matrix Spike - EPA CLP PR Sample No.: VBLKRO

COMPOUND	SPIKE	BLANK	BS	BS	QC.
	ADDED	CONCENTRATION	CONCENTRATION	.%	LIMITS
	(UG/L)	(UG/L)	(UG/L)	REC #	REC.
1,1-Dichloroethene Trichloroethene Benzene Toluene Chlorobenzene	50.000	0.0000	56.757	114	61-145
	50.000	0.0000	57.350	115	71-120
	50.000	0.0000	56.933	114	76-127
	50.000	0.0000	54.030	108	76-125
	50.000	0.0000	, 52.673	105	75-130

- # Column to be used to flag recovery and RPD values with an asterisk
- * Values outside of QC limits

RPD: 0 out of 0 outside limits Spike Recovery: 0 out of 5 outside limits

	•
COMMENTS:	

FORM 3 AIR VOLATILE BLANK SPIKE RECOVERY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-1200

Lab Code:

Case No.: SAS No.:

SDG No.: 9602L915

Matrix Spike - EPA CLP PR Sample No.: VBLKRV

COMPOUND	SPIKE	BLANK	BS	BS	QC.
	ADDED	CONCENTRATION	CONCENTRATION	%	LIMITS
	(ng)	(ng)	(ng)	REC #	REC.
1,1-Dichloroethene Trichloroethene Benzene Toluene Chlorobenzene	500.00	0.0000	542.13	108	59-172
	500.00	0.0000	448.31	90	62-137
	500.00	8.970	453.79	89	66-142
	500.00	0.0000	478.36	96	59-139
	500.00	0.0000	, _486.63	97	60-133

- # Column to be used to flag recovery and RPD values with an asterisk
- * Values outside of QC limits

RPD: 0 out of 0 outside limits Spike Recovery: 0 out of 5 outside limits

	\cdot
COMMENTS:	

4A VOLATILE METHOD BLANK SUMMARY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-1200

Lab Code: Case No.: SAS No.:

SDG No.: 9602L915

Lab File ID: X2709

Lab Sample ID: 96LVX020-MB1

Date Analyzed: 02/07/96

Time Analyzed: 1212

Matrix: (soil/water) AIR

Level: (low/med)

Instrument ID: 5970X

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01 02 03 04 05 06 07	VBLKRCMS AFTOUT-VOST-R1-TP1 AFTOUT-VOST-R1-TP3 AFTOUT-VOST-R1-TP4 AFTOUT-VOST-R1-TP5 AFTOUT-VOST-R1-TP5	96LVX020-MB1S 9602L915-001 9602L915-005 9602L915-007 9602L915-009 9602L915-013	X2710 , = X2712	1259 1410 1602 1636 1708 1821
08 09 10 11 12 13				
15 16 17 18 19 20 21				
21 22 23 24 25 26 27				
28 29 30				

COMMENTS:	

page 1 of 1

FORM IV VOA

VOLATILE METHOD BLANK SUMMARY

Contract: 02281-012-012-1200 Lab Name: ROY F. WESTON

Lab Code: Case No.: SAS No.:

SDG No.: 9602L915

Lab File ID: K2905

Lab Sample ID: 96LVK031-MB1

Date Analyzed: 02/09/96

Time Analyzed: 1449

Matrix: (soil/water) WATER

Level: (low/med) LOW

Instrument ID: 5970K

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01 02 03	VBLKROMS AFTOUT-VOST-R1-COND OUT-VOST-SB-COND	======================================	======================================	1532 1616 1650
04 05 06 07 08				
08 09 10 11 12 13				
14 15 16 17				
14 15 16 17 18 19 20 21 22 22 24 25 27				
23 24 25 26				
27 28 29 30				

COMMENTS:	

page 1 of 1

FORM IV VOA

4A VOLATILE METHOD BLANK SUMMARY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-1200

Lab Code: Case No.: SAS No.:

SDG No.: 9602L915

Lab File ID: Q021005

Lab Sample ID: 96LVQ015-MB1

Date Analyzed: 02/10/96

Time Analyzed: 1621

Matrix: (soil/water) AIR

Level:(low/med)

Instrument ID: 1050Q

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

SAMPLE NO. SAMPLE ID FILE ID ANALYZED PROPERTY OF THE PROPERTY		777	LAB	LAB	TIME
01 AFTOUT-VOST-R1-TP2 9602L915-002 Q021006 1 1725 Q021007 1815 03 04 05 06 07 08 09 10 11 12 12 13 14 15 16 17		EPA NO			ANALYZED
01 AFTOUT-VOST-R1-TP2 9602L915-004 Q021006 7 1725 1815 02 AFTOUT-VOST-R1-TP1 9602L915-002 Q021007 1815 03 04 05 06 07 08 09 10 11 12 12 13 14 15 16 17		SAMPLE NO.	3AM 100 10		=========
02 AFTOUT-VOST-R1-TP1 9602L915-002 Q021007 1815 03 04 05 06 07 08 09 09 09 09 10 11 12 12 13 14 15 16 17			06031915-004	0021006	1725
03 04 05 06 07 08 09 10 11 12 13 14 15 16		AFTOUT-VOST-RI-TP2	06021915-004	0021000 , _	
04 05 06 07 08 09 10 11 12 13 14 15 16	02	AFTOUT-VOST-RI-TPI	96021915-002	0021007	1015
05 06 07 08 09 10 11 12 13 14 15 16	03				
06	04				
07 08 09 10 11 12 13 14 15 16	05				
08 09 10 11 12 13 14 15 16					
09 10 11 12 13 14 15 16 17	07				
10	08				
11	7.0				
14 15 16 17	11				
14 15 16 17	10				
14 15 16 17	13				
15 16 17	14				
16	15				
17 18 19 20 21 22 23 24 25 26 27 28 29 30	16				
18	17				
19	18				
20 21 22 23 24 25 26 27 28 29	19				
21 22 23 24 25 26 27 28 29	20				
22 23 24 25 26 27 28 29	21				
23 24 25 26 27 28 29 30	22				
24	23				
25	24				
26	25				
27 28 29 30	26				
28 29 30	27				
29	28			1	
30	29				
	30				

COMMENTS:	

page 1 of 1

FORM IV VOA

4A VOLATILE METHOD BLANK SUMMARY

Contract: 02281-012-012-1200 Lab Name: ROY F. WESTON

Lab Code: Case No.: SAS No.:

SDG No.: 9602L915

Lab File ID: Q020904

Lab Sample ID: 96LVQ014-MB1

Date Analyzed: 02/09/96

Time Analyzed: 1137

Matrix: (soil/water) AIR

Level: (low/med)

Instrument ID: 1050Q

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01 02 03 04 05 06 07	VBLKRVBS AFTOUT-VOST-BT-TP1 AFTOUT-VOST-R1-TP6 AFTOUT-VOST-R1-TP5 AFTOUT-VOST-R1-TP4 AFTOUT-VOST-R1-TP3	96LVQ014-MB1S 9602L915-014 9602L915-012 9602L915-010 9602L915-008 9602L915-006	Q020906 , 2 Q020909 Q020910 Q020911 Q020913 Q020915	1327 1532 1609 1652 1809 1923
08 09 10 11 13 14				
15 16 17 18 19 20 21				
22 23 24 25 26 27 28				
29 30				

COMMENTS:	

page 1 of 1

FORM IV VOA

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON

Contract: 02281-012-012-1200

Lab Code: Case No.:

SAS No.:

SDG No.: 9602L915

Lab File ID: K2404

BFB Injection Date: 02/04/96

Instrument ID: 5970K

BFB Injection Time: 1107

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
===== 50 75 95 96 173 174 175 176	15.0 - 40.0% of mass 95 30.0 - 60.0% of mass 95 Base Peak, 100% relative abundance 5.0 - 9.0% of mass 95 Less than 2.0% of mass 174 50.0 - 100.0% of mass 95 5.0 - 9.0% of mass 174 95.0 - 100.9% of mass 174 95.0 - 9.0% of mass 176	19.9 50.9 100.0 7.5 0.0 (0.0)1 80.0 6.3 (7.9)1 79.7 (99.6)1 4.8 (6.0)2
Ì	1-Value is % of mass 174 2-Value is % of mass	ass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
02 03 04 05 07 08 09 10 11 11 11 11 11 11 11 11 11 11 11 11	SAMPLE NO. ===================================	SAMPLE 1D ====================================	K2405 K2406 K2407 K2408 K2409	02/04/96 02/04/96 02/04/96 02/04/96 02/04/96	1122 1158 1233 1307 1347
21 22					

page 1 of 1

FORM V VOA

1/87 Rev,

5A VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON

Contract: 02281-012-012-1200

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L915

Lab File ID: K2901

BFB Injection Date: 02/09/96

Instrument ID: 5970K

BFB Injection Time: 1217

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

	TON ADUNDANCE CRITERIA	% RELATIVE ABUNDANCE
m/e ===== 50 75 95 96 173 174 175 176 177	ION ABUNDANCE CRITERIA ===================================	20.7 50.8 100.0 7.4 0.0 (0.0)1 86.2 6.7 (7.8)1 83.5 (96.8)1 5.4 (6.5)2 ass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	TITO TOTAL TOTAL						
	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED =======	TIME ANALYZED =======		
01 02 03 04 05	VSTD050 VBLKRO VBLKROMS AFTOUT-VOST-R1-COND OUT-VOST-SB-COND	VSTD050 96LVK031-MB1 96LVK031-MB1S 9602L915-015 9602L915-016	K2903 K2905 K2906 K2907 K2908	02/09/96 02/09/96 02/09/96 02/09/96 02/09/96	1310 1449 1532 1616 1650		
06 07 08 09 10							
11 12 13 14 15							
16 17 18 19 20							
21 22							

5A VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON Contract: 02281-012-012-1200

Lab Code: Case No.: SAS No.: SDG No.: 9602L915

Lab File ID: X2701 BFB Injection Date: 02/07/96

Instrument ID: 5970X BFB Injection Time: 0713

Matrix:(soil/water) AIR Level:(low/med) ___ Column:(pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50 75 95 96 173 174 175 176	15.0 - 40.0% of mass 95 30.0 - 60.0% of mass 95 Base Peak, 100% relative abundance 5.0 - 9.0% of mass 95 Less than 2.0% of mass 174 50.0 - 100.0% of mass 95 5.0 - 9.0% of mass 174 95.0 - 100.9% of mass 174 95.0 - 9.0% of mass 176	18.5 46.6 100.0 8.4 0.0 (0.0)1 72.7 5.0 (6.9)1 69.8 (96.0)1 4.6 (6.7)2
	1-Value is % of mass 174 2-Value is % of mass 174	ass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

THIS TOND THE LEET TO THE						
EPA SAMPLE NO	•	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	
01 VSTD100 02 VSTD1000 03 VSTD2000 04 VSTD500 05 VBLKRC 06 VBLKRCMS 07 AFTOUT-VOS 08 AFTOUT-VOS 10 AFTOUT-VOS 11 AFTOUT-VOS 12 13 14 15 16 17 18 19 20 21 22	T-R1-TP3 T-R1-TP4 T-R1-TP5	VSTD100 VSTD1000 VSTD2000 VSTD500 96LVX020-MB1 96LVX020-MB1S 9602L915-001 9602L915-007 9602L915-009 9602L915-013	X2702 X2704 X2705 X2707 X2709 X2710 X2712 X2715 X2716 X2717 X2719	02/07/96 02/07/96 02/07/96 02/07/96 02/07/96 02/07/96 02/07/96 02/07/96 02/07/96	0737 0844 0915 1033 1212 1259 1410 1602 1636 1708 1821	

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON

Contract: 02281-012-012-1200

Lab Code:

Case No.:

SAS No.: SDG No.: 9602L915

Lab File ID: Q020801

BFB Injection Date: 02/08/96

Instrument ID: 1050Q

BFB Injection Time: 1357

Matrix:(soil/water) AIR Level:(low/med) ___ Column:(pack/cap) CAP

7/0	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
m/e ===== 50 75 95 96 173 174 175 176	15.0 - 40.0% of mass 95 30.0 - 60.0% of mass 95 Base Peak, 100% relative abundance 5.0 - 9.0% of mass 95 Less than 2.0% of mass 174 50.0 - 100.0% of mass 95 5.0 - 9.0% of mass 174 95.0 - 100.9% of mass 174 95.0 - 9.0% of mass 176	15.4 39.0 100.0 7.6 0.0 (0.0)1 90.7 6.6 (7.3)1 90.5 (99.8)1 7.1 (7.9)2
	2-Value is % of m	ass 176

1-Value is % of mass 174

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 02 03 04 05	VSTD500 VSTD1000 VSTD2000 VSTD100	VSTD500 VSTD1000 VSTD2000 VSTD100	Q020803 Q020804 Q020805 Q020807	02/08/96 02/08/96 02/08/96 02/08/96	1518 1600 1636 1749
06 07 08 09 10					
12 13 14 15 16					
17 18 19 20 21 22					

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5A VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Contract: 02281-012-012-1200 Lab Name: ROY F. WESTON

Lab Code: Case No.: SAS No.:

SDG No.: 9602L915

Lab File ID: Q020901

BFB Injection Date: 02/09/96

Instrument ID: 1050Q

BFB Injection Time: 0926

Matrix:(soil/water) AIR Level:(low/med) ___ Column:(pack/cap) CAP

ļ	TON ARIMDANCE CRITERIA	% RELATIVE ABUNDANCE
m/e ===== 50 75 95 96 173 174 175	ION ABUNDANCE CRITERIA ===================================	22.9 46.4 100.0 6.4 0.0 (0.0)1 55.9 4.3 (7.7)1 56.4 (100.9)1
177	1-Value is % of mass 174 2-Value is % of mass 174	4.2 (7.5)2 ass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

T 1 1 T P								
	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED			
01234567890111111111122	VSTD500 VBLKRV VBLKRVBS AFTOUT-VOST-BT-TP1 AFTOUT-VOST-R1-TP5 AFTOUT-VOST-R1-TP4 AFTOUT-VOST-R1-TP3		Q020902 Q020904 Q020906 Q020909 Q020910 Q020911 Q020915	02/09/96 02/09/96 02/09/96 02/09/96 02/09/96 02/09/96 02/09/96 02/09/96	1008 1137 1327 1532 1609 1652 1809 1923			
22				l	l			

5A VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Contract: 02281-012-012-1200 Lab Name: ROY F. WESTON

Lab Code: Case No.: SAS No.: SDG No.: 9602L915

Lab File ID: Q021001

BFB Injection Date: 02/10/96

BFB Injection Time: 1225 Instrument ID: 1050Q

Matrix:(soil/water) AIR Level:(low/med) ___ Column:(pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
===== 50 75 95 96 173 174 175 176	15.0 - 40.0% of mass 95	22.3 46.4 100.0 6.7 0.0 (0.0)1 57.3 3.9 (6.7)1 57.7 (100.6)1 4.0 (7.0)2
	1-Value is % of mass 174 2-Value is % of mass	 ass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VS 02 VI 03 A	STD500 BLKRU FTOUT-VOST-R1-TP2 FTOUT-VOST-R1-TP1	VSTD500 96LVQ015-MB1 9602L915-004 9602L915-002	Q021003 Q021005 Q021006 Q021007	02/10/96 02/10/96 02/10/96 02/10/96	1440 1621 1725 1815
12					

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FORM V VOA

8A VOLATILE INTERNAL STANDARD AREA SUMMARY

Contract: 02281-012-012-1200 Lab Name: ROY F. WESTON

SAS No.:

Case No.: Lab Code:

Instrument ID: 5970K

SDG No.: 9602L915

Lab File ID (Standard): K2903

Date Analyzed: 02/09/96

Time Analyzed: 1310

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

		IS1(BCM) AREA #	RT	IS2(DFB) AREA #	RT	IS3 (CBZ) AREA #	RT
	======================================	33265	7.37	117090	10.04	95025	16.73
	UPPER LIMIT	66530	7.87	234180	10.54	190050	17.23
	LOWER LIMIT	16632	6.87	58545 ==================================	9.54	47512 =======	16.23
	EPA SAMPLE NO.	======= 31488	===== 7.40	======= 111067	======	90926	===== 16.77
01 02 03 04	VBLKRO VBLKROMS AFTOUT-VOST-R1-COND OUT-VOST-SB-COND	28385 25524 23370	7.41 7.44 7.41	97920 95998 87850	10.08 10.08 10.08	82571 76679 70644	16.79 16.79 16.79
05 06 07 08							
09 10 11							
12 13 14							
15 16 17							
18 19 20							
21 22							

= Bromochloromethane (BCM) IS1 (DFB) = 1,4-Difluorobenzene IS2 (CBZ) = Chlorobenzene-d5

UPPER LIMIT = +100% of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

Column used to flag internal standard area values with an asterisk.

page 1 of 1

IS3

FORM VIII VOA

VOLATILE INTERNAL STANDARD AREA SUMMARY

Contract: 02281-012-012-1200 Lab Name: ROY F. WESTON

Case No.: Lab Code:

SDG No.: 9602L915

Date Analyzed: 02/07/96

Lab File ID (Standard): X2707

Time Analyzed: 1033

Instrument ID: 5970X

Matrix: (soil/water) AIR Level: (low/med) LOW Column: (pack/cap) CAP

SAS No.:

	IS1(BCM) AREA #	RT	IS2(DFB) AREA #	RT	IS3 (CBZ) AREA #	RT =====
12 HOUR STD	50907	6.49	229903	9.71	158570	16.73
UPPER LIMIT	101814	6.99	459806 =======	10.21	317140	17.23
LOWER LIMIT	25454	5.99	114952	9.21	79285	16.23
EPA SAMPLE NO. ==================================	### ### ##############################	 6.49 6.52 6.51 6.51 6.53 6.51	======================================	9.71 9.72 9.71 9.73 9.73 9.73	159497 164922 169568 170033 157007 163059 156428	16.74 16.74 16.74 16.74 16.74 16.74
21 22						

(BCM) = Bromochloromethane IS1

UPPER LIMIT = +100%

(DFB) = 1,4-Difluorobenzene IS2 = Chlorobenzene-d5 (CBZ)

of internal standard area.

LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

page 1 of 1

FORM VIII VOA

8A VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-1200

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L915

Lab File ID (Standard): Q020902

Date Analyzed: 02/09/96

Time Analyzed: 1008

Instrument ID: 1050Q

Matrix: (soil/water) AIR Level: (low/med) LOW Column: (pack/cap) CAP

		-					1
1		IS1 (BCM) AREA #	RT	IS2 (DFB) AREA #	RT	IS3 (CBZ) AREA #	RT =====
	12 HOUR STD	59254	13.40	403179	15.13	416696	19.37
	UPPER LIMIT	118508	13.90	806358	15.63	833392	19.87
	LOWER LIMIT	29627 =======	12.90	201590 ========,	14.63	208348	18.87
	EPA SAMPLE NO.	========	=====	=======	=====	========	=====
01 02 03	VBLKRV VBLKRVBS AFTOUT-VOST-BT-TP1B	56720 63170 46159	13.40 13.40 13.42	368186 446666 294822	15.15 15.13 15.15	350052 400407 243815	19.37 19.35 19.37 19.35
04 05 06 07	AFTOUT-VOST-R1-TP6B AFTOUT-VOST-R1-TP5B AFTOUT-VOST-R1-TP4B AFTOUT-VOST-R1-TP3B	51443 57259 73571 61240	13.40 13.42 13.40 13.40	302502 352087 426203 367892	15.13 15.15 15.15 15.15	290415 363685 427238 377200	19.37 19.37 19.37
08 09 10 11							
12 13 14							
15 16							
17 18 19							
20 21							
22		l	l		1	l	. 1 1

= Bromochloromethane (BCM) IS1 = 1,4-Difluorobenzene (DFB) IS2 = Chlorobenzene-d5 (CBZ)

UPPER LIMIT = +100%

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

Column used to flag internal standard area values with an asterisk.

page 1 of 1

FORM VIII VOA

8A VOLATILE INTERNAL STANDARD AREA SUMMARY

Contract: 02281-012-012-1200 Lab Name: ROY F. WESTON

Case No.: Lab Code:

SAS No.:

SDG No.: 9602L915

Lab File ID (Standard): Q021003

Date Analyzed: 02/10/96

Instrument ID: 1050Q

Time Analyzed: 1440

Matrix: (soil/water) AIR Level: (low/med) LOW Column: (pack/cap) CAP

		IS1 (BCM) AREA #	RT	IS2(DFB) AREA #	RT	IS3(CBZ) AREA #	RT
==	12 HOUR STD	64073	13.40	388304	15.15	408945	19.37
==	UPPER LIMIT	128146	13.90	776608	15.65	817890	19.87
==	LOWER LIMIT	32036	12.90	194152	14.65	204472	18.87
= =	EPA SAMPLE NO.		=====	=======================================			
02 AI 03 AI	BLKRU FTOUT-VOST-R1-TP2B FTOUT-VOST-R1-TP1B	54534 73067 75545	13.40 13.40 13.42	329131 390192 431539	15.13 15.13 15.15	280207 410245 469286	19.35 19.35 19.37
04 05 06 07							
08 — 09 —							
11 12 13							
14 15 16							
17							
19 20 21							
22							

= Bromochloromethane (BCM) IS1 = 1,4-Difluorobenzene IS2 (DFB) = Chlorobenzene-d5 IS3 (CBZ)

UPPER LIMIT = +100% of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

Column used to flag internal standard area values with an asterisk.

page 1 of 1

FORM VIII VOA

Roy F. Weston, Inc. Lionville, Lab.

SAMPLE PREP RECORD

Extraction Batch No: 96LVX020

Analyst: JS

Extract. Date: 02/07/96

Method: N/A

Sheet no.:

Client: COE-HOT GAS Adsorbent: Analyst: Solvent: Cleanup Date: Test: OVOS

C/D FACTOR 1.0 1.0 1.0 1.0 Y/N Solids 0.00 0.00 00.0 00.0 GPC Split 1.0 1.0 Mult. Initial Surr. Spike Final Final VOL Mult. VOL 1.0 1.0 1.0 1.0 1.0 Mult. 1.0 WT/VOL Hď AFTOUT-VOST-R1-TP3F AFTOUT-VOST-R1-TP4F AFTOUT-VOST-R1-TP5F AFTOUT-VOST-BT-TP1F AFTOUT-VOST-R1-TP1F Client ID Client Name COE-HOT GAS LIMS Report Date: 02/20/96 VBLKRC VBLKRC 96LVX020-MB1 TS T 700 T 600 H 96LVX020-MB1 T 013 T 001 005 Sample No: 9602L915-

Comments:

Surrogate:

Spike:

Reason for Transfer	1000	
Date Time		
Received By		
Date Time		
Relinquished By		
Extracts Transferred		

Method: N/A

Analyst: VR

Extraction Batch No: 96LVQ015 Extract. Date: 02/10/96

Client: COE-HOT GAS

698

Adsorbent: Analyst: Solvent: Cleanup Date: Test: OVOS

LIMS Report Date: 02/20/96

FACTOR c/p 1.0 1.0 1.0 1.0 Y/N Solids 0.00 0.00 0.00 GPC ZZ z ZZ Split 1.0 1.0 1.0 1.0 Mult. 1.0 Initial Surr. Spike Final Final
WT/VOL Mult. Mult. VOL VOL 1.0 1.0 1.0 1.0 μd -AFTOUT-VOST-R2-TP4B AFTOUT-VOST-R1-TP1B AFTOUT-VOST-R1-TP2B AFTOUT-VOST-R2-TP1B AFTOUT-VOST-R2-TP2B AFTOUT-VOST-R2-TP3B Client ID COE-HOT GAS COE-HOT GAS Client Name 004 T 96LVQ015-MB1 T 008 T 004 T 900 002 002 Sample No: 9602L953-9602L915-

Surrogate: Comments:

Spike:

Reason for Transfer		
Date Time		
Received By		
Date Time		
Relinquished By		
Extracts Transferred		

Roy F. Weston, Inc. Lionville, Lab.

SAMPLE PREP RECORD

Extraction Batch No: 96LVQ014

Analyst: VR

Method: N/A

٦

Sheet no.:

Client: COE-HOT GAS Adsorbent: Analyst: Cleanup Date: Solvent: Extract. Date: 02/09/96 Test: OVOS

FACTOR c/p 1.0 1.0 1.0 GPC % Y/N Solids 00.0 0.00 0.00 0.00 0.00 Split Mult. Initial Surr. Spike Final Final VOL Mult. VOL 1.0 1.0 1.0 1.0 1.0 WT/VOL Mult. 1.0 þН Ξ, AFTOUT-VOST-R1-TP3B AFTOUT-VOST-R1-TP4B AFTOUT-VOST-R1-TP5B AFTOUT-VOST-R1-TP6B AFTOUT-VOST-BT-TP1B Client ID Client Name COE-HOT GAS LIMS Report Date: 02/20/96 VBLKRV VBLKRV 96LVQ014-MB1 TS 96LVQ014-MB1 T 014 T T 900 010 012 800 Sample No: 9602L915-

Comments:

Surrogate:

Spike:

	<u> </u>	_
Reason for Transfer		
Date Time		
Received By		
Date Time		
Relinquished By		
Extracts Transferred		

Roy F. Weston, Inc. Lionville, Lab.

SAMPLE PREP RECORD

Method: N/A

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Sheet no.:

	HOT GAS		C/D FACTOR
Method: N/A	Client: COE-HOT GAS	Adsorbent:	GPC & C/D Y/N Solids FACTOR
PS	•	Ads	Split Mult.
Analyst: PS	Analyst:		nal Final
6LVK031			. Spike Fi . Mult. V
Extraction Batch No: 96LVK031	Cleanup Date:	Solvent:	pH Initial Surr. Spike Final Final Split GPC & WT/VOL Mult. Wol. VOL Mult. Y/N Sol:
a: 02/09/96	Test: OVOS	e: 02/20/96	Client Name Client ID
Extract. Date: 02/09/96	Test	IMS Report Date: 02/20/96	Sample No:

Surrogate: Comments:

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AFTOUT-VOST-R2-COND AFTOUT-VOST-R3-COND

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VBLKRO VBLKRO

96LVK031-MB1 TS

96LVK031-MB1 T

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AFTOUT-VOST-R1-COND

COE-HOT GAS

9602L915-

OUT-VOST-SB-COND

016 T

015 T

COE-HOT GAS

9602L953-

Spikė:

A A A	Reason for Iranster	
	Date Time	
	Received By	
	Date Time	
	Relinquished By	
	Extracts Transferred	

END OF DATA PACKAGE

Roy F. Weston, Inc. - Lionville Laboratory
VOST ANALYTICAL DATA PACKAGE FOR
COE-HOT GAS

DATE RECEIVED: 02/07/96

RFW	LOT	#	. 96	150	953
RPW	TOT	*	: 20	$\cup Z \bot$	コココ

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
			061170018	02/02/96	N/A	02/12/96
AFTOUT-VOST-R2-TP1F	001		96LVQ018	02/02/96	N/A N/A	02/10/96
AFTOUT-VOST-R2-TP1B	002		96LVQ015	02/02/96	N/A N/A	02/12/96
AFTOUT-VOST-R2-TP2F	003		96LVQ018	02/02/96	N/A N/A	02/12/96
AFTOUT-VOST-R2-TP2B	004		96LVQ015		N/A N/A	02/10/96
AFTOUT-VOST-R2-TP3F	005	AI	96LVQ018	02/02/96		02/12/96
AFTOUT-VOST-R2-TP3B	006		96LVQ015	02/02/96	N/A	
AFTOUT-VOST-R2-TP4F	007		96LVQ018	02/02/96	N/A	02/12/96
AFTOUT-VOST-R2-TP4B	008		96LVQ015	02/02/96	N/A	02/10/96
AFTOUT-VOST-R2-TP5F	009		96LVQ018	02/02/96	N/A	02/13/96
AFTOUT-VOST-R2-TP5B	010		96LVQ017	02/02/96	N/A	02/11/96
AFTOUT-VOST-R2-TP6F	011		96FAÖ018	02/02/96	N/A	02/13/96
AFTOUT-VOST-R2-TP6B	012	AI	96LVQ017	02/02/96	N/A	02/11/96
AFTOUT-VOST-R2-COND	013	W	96LVK031	02/02/96	N/A	02/09/96
AFTOUT-VOST-SB-TP1F	014	AI	96LVQ018	02/02/96	N/A	02/13/96
AFTOUT-VOST-SB-TP1B	015	AI	96LVQ017	02/02/96	N/A	02/11/96
AFTOUT-VOST-R3-TP1F	016	· AI	96LVQ018	02/04/96	N/A	02/13/96
AFTOUT-VOST-R3-TP1B	017	AI	96LVQ017	02/04/96	N/A	02/11/96
AFTOUT-VOST-R3-TP2F	018	AI	96LVQ019	02/04/96	N/A	02/13/96
AFTOUT-VOST-R3-TP2B	019	AI	96LVQ017	02/04/96	N/A	02/11/96
AFTOUT-VOST-R3-TP3F	020	AI	96LVQ019	02/04/96	N/A	02/13/96
AFTOUT-VOST-R3-TP3B	021	AI	96LVQ017	02/04/96	N/A	02/11/96
AFTOUT-VOST-R3-TP4F	022	IA	96LVQ019	02/04/96	N/A	02/13/96
AFTOUT-VOST-R3-TP4B	023	AI	96LVQ017	02/04/96	N/A	02/11/96
AFTOUT-VOST-R3-TP5F	024	AI	96LVQ019	02/04/96	N/A	02/13/96
AFTOUT-VOST-R3-TP5B	025	IA	96LVQ017	02/04/96	N/A	02/11/96
AFTOUT-VOST-R3-TP6F	026	AI	96LVQ019	02/04/96	N/A	02/13/96
AFTOUT-VOST-R3-TP6B	027		96LVQ017	02/04/96	N/A	02/12/96
AFTOUT-VOST-R3-COND	028	W	96LVK031	02/04/96	A/N	02/09/96
AB QC:						•
						
VBLKRY	MB1	AI	96LVQ018	N/A	N/A	02/12/96
VBLKRU	MB1	AI	96LVQ015	N/A	N/A	02/10/96
VBLKRX	MB1	AI	96LVQ017	N/A	N/A	02/11/96
VBLKRO	MB1	W	96LVK031	N/A	N/A	02/09/96
VBLKRO	MB1 E	s w	96LVK031	N/A	N/A	02/09/96
VBLKSE	MB1	AI	96LVQ019	N/A	N/A	02/13/96

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CHAIN OF CUSTODY

WESTON Analytics Use Only

20 COC Record Present Upon Semble Rec't 3) Present on Sample Package Y on N Sample Y of N Samples were COC Tape was:

1) Shipped Lor
Hand Delivered
Airbild Samples You'ver Airbild Samples You'ver Airbild Samples You'ver Airbild Samples You'ver Airbild Samples You'ver Airbild Samples You'ver Airbild Samples You 4) Unbroken on **WESTON Analytics Use Only** #4650b FOSAR total 12904 #05503 4030 Rein with Coolern with 3) Received in Good Condition X or (N) 4) Labels indicate 2)(Ambient of Chilled Properly Preserved Holding Fimbs

Y or N 5) Received Within WESTON Apaytics Use Only NORG CN Metal **Custody Transfer Record/Lab Work Request** Samples Labels and COC Record? Y or N NOTES: 2 平 Discrepancies Between 1378 Or Smith VS99 BOG ORGANIC X Time **L377** AOV Date Matrix Date Time Liquid Solid Liquid Solid L375 Received by #/Type Container 2442 DATE/REVISIONS: ANALYSES REQUESTED Preservatives Refrigerator # XIN O Taled Volume 잂 L373 Relinquished Matrix OC Chosen MS MSD 200 4 DR-116-119-11-105-10-121 toc 116-11/1001 wis 1/1 and Work Order # 22281-012-012-919-0 013 COE-16-1805-105-105-100 1-1/42 - 16-116-111-28-58-101 MININGE-16-16AN NOT-10-173 1372 Morala - 16-1105 - 105 - 105 CH American Post-Ro-IP 1 100 DE-16-1505 105 -12 -12 1/05-16-11-W-145-10-116 Butter Town Town FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS Time Client ID/Description NV 12that 50+0/5240 Date Client OE TAT UKS Received Est. Final Proj. Sampling Date Date Rec'd Date ۵ Project Contact/Phone # _ AD Project Manager AL 202193 90 Special instructions: RFW 21-21-001/A-7/91 Relinquished 8 - Soil 8E - Sediment 9O - Soild 9L - Studge W - Water A - Ar DS - Drum Liquids EP/TCLP Leachate WI - Wipe X - Other F - Fish Account # DL - Drum MATRIX CODE8: ن

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381-596a Record Present Upon Sample Rec't 7 ŏ oken on COC Tapamas WESTON Analytics Use Only 1) Present 5) Received Within ک ۲ 2 Ambient or Chi Hand Delivered Holding Times Samples were: Cooler# 1) Shipped **WESTON Analytics Use Only** Airbill # CM Metal Z Custody Transfer Record/Lab Work Request Discrepancies Between Samples Labels and COC Record? Y or P NOTES: Ref# 175 S Dry 21/10 1378 di 9H WHICK Time 62.5 Pest/ ORGANIC 1377 AN8 76.1.2 Date AOV Date Time Collected Collected Liquid Solid Liquid Sold 1375 Received by DATE/REVISIONS: #/Type Conteiner ANALYSES REQUESTED Preservatives Ġ Refrigerator # Q S L373 Matrix Volume Relinquished Anny & Tent - Tent (Hiner Specifica) Matrix OC-Chosen (<) MS MSD 028 CK-16-11955-145-183 KOL 100-110-119WI-105-18-1701 CK- H6- APPLY WAY-18-183 SH-88-1802-185-183-18 L372 ON +16-1475-1055-13 WW. - H6- APRJ - WET -P3 -17 Le - 116-1195 - WI-13-17 Time FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS Work Order # 02251-012-012-012-1300 Cilent ID/Description Project Contact/Phone # Leff co. 24 Date 0/68-01/00 pay N/ N/ Received by Est. Final Proj. Sampling Date چ WESTON Analytics Use Only Client OC - NOT CAS Special Instructions: RFW 21 21:001/A 7/91 AD Project Manager 90 Relinquished DL - Drum WI - Wipe Out X - Other Out F - Fish EP/TCLP Leachaid SE Soil
SE Sediment
SO Soil
SL Studge
W Water Old
A Ar Old
DS Drum Solids 01/0 OC 572 Date Rec'd Account # MATRIX CODES:

DATA SUMMARY

Snville Laboratory Roy F. Weston, Inc.

VOST TUBE BY GC/MS

Work Order; 02281012012 Page: Client: COE-HOT GAS RFW Batch Number: 9602L953 APTOUT-VOST R2-TP3B 1.00 total ng AIR AFTOUT-VOST-1.00 R2-TP3F total ng AIR 102 AFTOUT-VOST-1.00 R2-TP2B total ng 004 AIR AFTOUT-VOST-1.00 R2-TP2F total ng 003 AIR 106 113 65 AFTOUT-VOST-1.00 R2-TP1B total ng 007 AIR Cust ID: AFTOUT-VOST-1.00 R2-TP1F total ng 001 124 Bromofluorobenzene Toluene-d8 1,2-Dichloroethane-d4 RFW#: Matrix: Units: Information Sample

25 200 500 240 500 100 25 25 49 25 25 25 25 25 500 100 25 25 25 25 2200 500 50 25 25 25 25 25 32 500 16 1800 500 25 100 25 25 100 47 7300 500 500 50 1500 500 100 25 25 500 100 1800 50 *= Outside of EPA CLP QC limits. 1,1,2,2-Tetrachloroethane 1,2-Dichloroethene (trans) Frans-1,3-Dichloropropene cis-1,3-Dichloropropene 1,1,2-Trichloroethane 1,1,1-Trichloroethane 4-Methyl-2-pentanone Bromodichloromethane Carbon Tetrachloride Dibromochloromethane 1,2-Dichloropropane 1,1-Dichloroethane_ 1,2-Dichloroethane 1,1-Dichloroethene Methylene Chloride **Tetrachloroethene** Carbon Disulfide Trichloroethene Vinyl Chloride Vinyl Acetate Chloromethane Bromomethane Chloroethane Chloroform 2-Hexanone 2-Butanone Bromoform Surrogate Recovery Benzene Acetone

Report Date: 02/20/96 16:01

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890	
OT-VOST- R2-TP3B 006	25 25 25 25 25 200
AFTOUT-VOST- R2-TP3B 006	
AFT	
- H	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
e: 1b or-vost r2-rp3F 005	5 25 25 25 25 25 100
age: rour R2	
Work Order: 02281012012 Page: 1b AFTOUT-VOST- AFTOUT-VOST- R2-TP2F R2-TP3F R2-TP3F 003 004 005	
01201 VOST- TP2B 004	255 U 225 U 225 U 225 U 225 U
2810120 UT-VOST R2-TP2B 004	25 25 25 25 25 100
022	
der:	, n
Work Or UT-VOST R2-TP2F	12 25 25 25 25 5
MOT- OUT- R2-	
AFT	
- E 81 2	
GAS AFTOUT-VOST- R2-TP1B 002	25 25 25 25 25 25 100
TOUT	
티	
Cust ID: AFTOUT-VOST-R2-TP1F RFW#: 001	10 J 25 U 25 U 25 U 25 U 6 J 6 J
COE-HOUT-VOST	10 22 10 10 10
FTO	
C1 : #:	
C (St ID: RFW#:	imit
Cn	30 1
602L	sther
6	nyle
RFW Batch Number: 96021953 Cu	Toluene Chlorobenzene Ethylbenzene Styrene Xylene (total) 2-chloroethylvinylether *= Outside of EPA CLP QC limits
N H	enze nzen (tot oeth
Bat	Toluene Chlorobenzene Ethylbenzene Styrene Xylene (total) 2-chloroethylv
RFW	Tol Chl Eth Sty Xyl Xyl

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Roy F. Weston, Inc. - Dronville Laboratory

Report Date: 02/20/96 16:01

VOST TUBE BY GC/MS

6 10 AFTOUT-VOST-R2-TP6B 1.00 total ng 500 500 25 25 100 25 AIR 500 25 500 25 25 25 25 11 25 AFTOUT-VOST-1.00 R2-TP6F total ng Work Order: 02281012012 Page: 011 500 25 25 100 25 25 AIR 500 25 25 25 3300 113 AFTOUT-VOST-1.00 R2-TP5B total ng 010 25 500 100 25 500 25 25 AIR 129 105 AFTOUT-VOST-1.00 R2-TP5F total ng 600 500 500 AIR 3100 100 130 82 Cust ID: AFTOUT-VOST- AFTOUT-VOST-1.00 total ng R2-TP4B 008 500 AIR 500 100 370 25 25 25 Client: COE-HOT GAS 1.00 total ng R2-TP4F 007 AIR 500 100 25 25 3000 D.F.: 1,2-Dichloroethane-d4 Toluene-d8 **Bromofluorobenzene** RFW#: Unita: Matrix: 1,1,2,2-Tetrachloroethane 1,2-Dichloroethene (trans) Trans-1,3-Dichloropropene RFW Batch Number: 9602L953 cis-1,3-Dichloropropene 1,1,2-Trichloroethane 1,1,1-Trichloroethane 4-Methyl-2-pentanone_ Dibromochloromethane Bromodichloromethane Carbon Tetrachloride 1,2-Dichloropropane 1,1-Dichloroethene 1,1-Dichloroethane 1,2-Dichloroethane Methylene Chloride Tetrachloroethene Carbon Disulfide Trichloroethene Vinyl Acetate Vinyl Chloride Chloromethane Bromomethane Chloroethane 2-Hexanone Information Chloroform 2-Butanone Bromoform Surrogate Recovery Benzene Acetone Sample

*= Outside of EPA CLP QC limits.

0	الله الله	
AFTOUT - VOST -	KZ-1F0B 012	25 U 25 U 25 U 25 U 25 U 26 U
Page: 2b	R2-TP6F 011	7 7 7 2 25 U 25 U 25 U 25 U 25 U 25 U 25
Work Order: 02281012012 Page: 2b FTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST	R2-TP5B 010	25 U 25 U 25 U 25 U 25 U 25 U 100 U
GAS Work Order: 02281012012 Page: 2b AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST-	R2-TP5F 009	7 J 25 U 25 U 25 U 25 U 25 U 100 U
GAS AFTOUT-VOST-	R2-TP4B 008	25 U 25 U 25 U 25 U 25 U 25 U 25 U
3 Client: COE-HOT GAS	R2-TP4F 007	14 J 25 U 25 U 25 U 5 J 8 J
T I	RFW#:	/lether
RFW Batch Number: 9602L953		Toluene Chlorobenzene Ethylbenzene Styrene Xylene (total) 2-chloroethylvinylether *= Outside of EPA CLP QC limits

Conville Laboratory Roy F. Weston, Inc. -

Work Order: 02281012012 Page: 3a VOST TUBE BY GC/MS

Client: COE-HOT GAS

RFW Batch Number: 9602L953

Report Date: 02/20/96 16:01

I () AFTOUT-VOST-1.00 R3-TP2F total ng 018 AIR AFTOUT-VOST-1.00 R3-TP1B total ng 017 AIR AFTOUT-VOST- AFTOUT-VOST-1.00 total ng R3-TP1F 016 AIR 1.00 SB-TP1B total ng 015 AIR Cust ID: AFTOUT-VOST- AFTOUT-VOST-1.00 total ng SB-TP1F 014 AIR 1.00 R2-COND 013 nd/I WATER D.F.: RFW#: Matrix: Units: Information Sample

Units:	ng/r		total ng	total ng	Gu	corat ng	-	נטנמו זוא		5. TB.	7 7
Toluene-d8	102	من	3 06	110	مد	115	de	94	عد	96	مد
Surrogate Bromofluorobenzene	96	مين	124 %	101	de	113	æ,	137		109	من
1,2	96	مد	83	96	مد	98	مد	106	مد	108	مد
 		:£1===:	:======E	=======	===£1==	11 13 14 11 11 11 11	=£1===]======================================	El===		≖£1
Chloromethane	10	D	50 U		0	20	ט	200		19	
Bromomethane	10	Þ	5 JB	3 130	0	26	JB	110		140	æ
Vinvl Chloride	10	Ω	50 U	S	50 U	50	ם	50 (ם	50	ם
Chloroethane	10	D	50 U	r.	20 U	50	n	50	5	20	ם
Methylene Chloride	8	JB	29 B	4	44 B	43	В	57 I	œ	28	æ
Acetone	32		1700	200	n o	1300		840		620	
Carbon Disulfide	S	n	25 U	73	25 U	11	ט	25 [ם	13	ה
1.1-Dichloroethene	5	Ω	25 U	7	5 U	25	p	25 (ם	25	D
1,1-Dichloroethane	ស	n	25 U	73	5 U	25	n	25 1	ם	25	n
1,2-Dichloroethene (trans)	Ŋ	n		7	5 U	25	n	25 1	5	25	D
Chloroform	ю	ט	25 U	(4)	2 O	25	D	25	5	25	D
1,2-Dichloroethane	ស	n		CA	D 5	25	n	25 1	5	. 25	D
2-Butanone	10	D	500 U	50	D O	200	D		5	200	D
1,1,1-Trichloroethane	ស	Ω	25 U	N	12 U	25	D		ם	25	ם
Carbon Tetrachloride	ß	n			12	25	n		ם	25	D
Vinyl Acetate	10	Ω			D 0	100	n		ם	100	D
Bromodichloromethane	S	Ω			.5 U	25	D		ם	25	D
1.2-Dichloropropane	S	D			15 U	25	Ω		n	25	D
cis-1,3-Dichloropropene	ហ	n	25 U		12 O	25	n		ם	25	Þ
Trichloroethene	ß	n			15 U	25	D		D	25	Þ
Dibromochloromethane	ស	Ω			15 U	25	Ω		Þ	. 25	Þ
1,1,2-Trichloroethane	ស	D	25 U		25 U	25	D	25	D	25	Þ
Benzene	2	n	6 JB		15 U	18	JB		毘	51	
Trans-1, 3-Dichloropropene	2	Ω	25 U		15 U	25	Þ		Þ	25	Ω
Bromoform	2	Ω	25 U		35 U	25	D		Þ	25	Þ
4-Methyl-2-pentanone	10	n	500 U	2(200 U	200	D		ם	200	D
2-Hexanone	10	D	200 U	Š	200 U	200	D		D.	200	D
Tetrachloroethene	.	n	25 U		25 U	25	D		n	25	ם
1,1,2,2-Tetrachloroethane	S	n	25 U		35 U	25	n		Þ	25	ם
*= Outside of EPA CLP QC limits.											

210	
AFTOUT-VOST- R3-TP2F 018	25 25 U 25 U 12 J 9 J
Page: 3b AFTOUT-VOST- R3-TP1B 017	25 U 25 U 25 U 25 U 25 U 4 J 100 U
Mork Order; 02281012012 Page: 3b AFTOUT-VOST- AFTOUT-VOST- SB-TP1B R3-TP1F R3-TP1B 015 016 017	11 J 25 U 25 U 25 U 6 J 100 U
Work Orde AFTOUT-VOST- SB-TP1B 015	25 U 25 U 25 U 25 U 25 U 25 U 100 U
GAS AFTOUT-VOST- SB-TP1F 014	25 U 25 U 25 U 25 U 25 U 25 U 25 U
Cust ID: AFTOUT-VOST- R2-COND R2-COND	5 U S U S U S U S U S U S U S U S U S U
RFW Batch Number: 9602L953 Client: COE-HOT GAS Cust ID: AFTOUT-VOST- AFTO R2-COND RFW#: 013	Chlorobenzene Ethylbenzene Styrene xylene (total) 2-chloroethylvinylether *= Outside of EPA CLP QC limits.
RFW Batch Number	Toluene Chlorobenzene Ethylbenzene Styrene Xylene (total) 2-chloroethylvinylether

Roy F. Weston, Inc. - Lionville Laboratory

Report Date: 02/20/96 16:01

Work Order: 02281012012 Page: 4a VOST TUBE BY GC/MS Client: COR-HOT GAS

		VOST TUBE	BI GC/MS	Work Order: 02281012012	Meport Dace: 4a	e	<u> </u>
RFW Batch Number: 9602L953	Cilent: COR	COR-NOT GAS	4100	1		:1) 1
Cust ID:	AFTOUT-VOST-	AFTOUT-VOST-	AFTOUT-VOST-	AFTOUT-VOST-	AFTOUT-VOST-	AFTOUT-VOST-	Ú
	R3-TP2B	R3-TP3F	R3-TP3B	R3-TP4F	R3-TP4B	R3-TP5F	
Sample . RFW#:	019	020	021	022	023	024	٠ ٠,
Information Matrix:	AIR	AIR	AIR	AIR	AIR	AIR	j
	1.00	1.00	1.00	1.00	1.00		
Units:	total ng	total ng	total ng	total ng	total ng	total ng	
Toluene-d8	104 \$	\$ 26	101	114 %	107	84 %	1
Surrogate Bromofluorobenzene	179 * \$	140 %	165 * \$	160 * \$	190 * \$	3 86	
1,2	117 %	124 %	108	102 %	_	* 08 *	_
	======================================	.========fl 50 U	[=====================================	.=====================================	======================================		_4
Bromomethane	97	0 0S	78	50 U	87	50 U	
Viny Chloride	50 U	50 U	50 U	20 U	20 U	20 U	
Chloroethane		50 U	50 U	20 U	20 U	50 U	
Methylene Chloride	_ 22 JB		3 23 JB	3 13 JB	25 B	22 JB	æ
Acetone	1300	260	440 J	2100	450 J	1600	
Carbon Disulfide	_ 25 U	7 J	25 U	J 7	25 U	25 U	
1,1-Dichloroethene	25 U	25 U	25 U	25 U	25 U	25 U	
1,1-Dichloroethane	25 U	25 U	25 U	25 U	25 U	25 U	
1,2-Dichloroethene (trans)	_ 25 U	25 U	25 U	25 U	25 U	25 · U	
	_ 25 U	25 U	25 U	25 U	25 U	25 U	
1,2-Dichloroethane	25 U	25 U	25 U	25 U	25 U	25 U	
2-Butanone	200 U	200 U	200 U	200 U	200 U	200 U	
1,1,1-Trichloroethane	25 U	25 U	25 U	25 U	25 U	25 U	
Carbon Tetrachloride	25 U	25 U	25 U	25 U	25 U	25 U	
Vinyl Acetate	•	100 U	100 U	100 U	100 U	100 U	
Bromodichloromethane	_ 25 U	25 U	25 U	25 U	25 U	25 U	
1,2-Dichloropropane	25 U	25 U	25 U	25 U	25 U	25 U	
cis-1,3-Dichloropropene		25 U	25 U	25 U	75 O	45 U	
Trichloroethene	25 U	25 U	25 U	25 U	25 U	75 U	
Dibromochloromethane	_ 25 U		25 U	25 U	25 U	25 U	
1,1,2-Trichloroethane						25 U	
Benzene	10 JB	В 15 Л	8 JB		12 JB		
Trans-1,3-Dichloropropene	_ 25 U	25 U	25 U	25 U	25 U	25 U	,
Bromoform	25 U	25 U	25 U	25 U	25 U	25 U	
4-Methyl-2-pentanone		200 U	200 U	200 U	200 U	200 U	
2-Hexanone	200 U	200 U	N 005	200 U	200 U	200 U	
Tetrachloroethene	25 U	25 U	25 U	25 U	25 U	25 U	
1,1,2,2-Tetrachloroethane	25 U	25 U	25 U	25 U	25 U	25 U	
*= Outside of EPA CLP QC limits.							

	Cust ID:	Cust ID: AFTOUT-VOST-	T- AFTOUT-VOST-	AFTOUT-VOST-	UT-VOST- AFTOUT-VOST-	AFTOUT-VOST-	AFTOUT-VOST-
	RFW#:	R3-TF2B 019	K3 - TF3F 020	n3-1535 021	022	023	024
Толиепе		25 U	10 J	25 U	B J	25 U	J 7
Chlorobenzene		25 U	25 U	25 U	25 U	25 U	25 U
Ethylbenzene		25 U	25 U	25 U	25 U	25 U	25 U
Styrene			25 U	25 U	25 U	25 U	25 U
Vylene (total)		_	25 U	25 U	25 U	a G	25 U
2-chloroethylvinylether	her		100 U	100 U	100 U	100 U	100 U
*= Outside of EPA CLP QC limits.	P QC limits.						

Inville Laboratory VOST TUBE BY GC/MS Roy F. Weston, Inc. -

Report Date: 02/20/96 16:01

Client: COR-HOT GAS

 \mathbf{C} -0 96LVQ018-MB1 96LVQ015-MB1 1.00 total ng AIR VBLKRU Work Order: 02281012012 Page: 5a 1.00 total ng AIR Cust ID: AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST- AFTOUT-VOST- VBLKRY 1.00 R3-COND ng/L 028 WATER 1.00 R3-TP6B total ng 027 AIR 1.00 total ng R3-TP6F 026 AIR 1.00 total ng R3-TP5B 025 AIR D.F.: Units: RFW#: Matrix: RFW Batch Number: 9602L953 Information Sample

UNICS:	roral ng	د	Oca1 119		1000	ת	า กร			1		
Toluene-d8	116	عن	96	مد	111	مد	100	مد	147	حن	127	d o
Surrogate Bromofluorobenzene	179 *	عن	125	من	179 *	œ	96	%	113	46	101	من
1.2		عن ،	92	de	116	من	86	مد	901.	de .	98	امين
11 15 15	11 11 11 11 11 11 11	f]=====	16 14 11 11 11	:fl===	H H H D H	=f]===	11 11 11 11 11 11 11 11 11 11 11 11 11	=£]===	11 11 11 11 11 11 11 11 11 11 11 11 11	= £] ====		=£1
Chloromethane	4600	囶	20	Þ	2500	凶	10	n	20	n	20	n
Dromomethane	9		20	Ω	360		10	n	25	ט	20	D
Vinyl Chloride	S	Ω	20	n	50	Ω	10	Ω	20	n		D
Chloroethane	50	n	20	Ω	20	ם	10	D	20	D	20	D
Methylene Chloride	52	8	22	er,	31	В	9	В	19	ם	57	
Doetone	200	Ω	930		200	D	88		200	n	200	Þ
Carbon Dianlfide	25	D	9	ם	25	D	ស	D	25	D	25	Þ
1 1-Dichloroethene		D	25	D	25	D	ស	n	25	Ω	25	Þ
1 1-Dichloroethane	25	D	25	D	25	D	വ	Ω	25	D	25	Þ
1 2-Dichloroethene (trans)	25	D	25	D	25	Ω	5	n	25	n	25	ם
Chloroform	25	. D	25	D	25	Ω	7	ט	25	ם	25	ם
1 2-Dichloroethane	25	n	25	Ω	25	Ω	2	D	25	Þ	25	Þ
2-Rutanone	200	Ω	200	n	200	n	10	Ω	200	Ω	200	D
1.1.1-Trichloroethane	25	Ω	25	n	25	n	S	n	25	Þ	25	ם
Carbon Tetrachloride	25	Ω	25	Ω	25	n	ស	D	25	Þ	25	Þ
Vinyl Acetate	100	D	100	n	100	D	10	D	100	n	100	ח
Bromodichloromethane	25	n	25	Ω	25	D	2	ם	25	D	25	D
1 2 - Dichloropropane	25	n	25	D	25	D	ស	Þ	25	D	25	Þ
ris 1 3-Dichloropropene	25	D	25	D	25	n	S	D	25	Ω	25	D
Trichloroethene	25	D	25	Þ	25	D	ស	D	. 52	n	25	ם
Dibromochloromethane	25	n	25	Ω	25	D	Ŋ	D	25	Þ	25	D
1.1.2-Trichloroethane	25	Ω	25	n	25	D	S	D	25	D	25	ב
Benzene	12	JB.	9	ם	12	AB B	ß	Ω	4	כי	11	ם
Trang-1 3-Dichloropropene	25	Ω	25	n	25	Ω	ß	n	25	n	25	ם
Bromoform	25	D	25	n	25	Ω	ß	Ω	25	Þ	25	Þ
4-Methyl-2-pentanone	200	Ω	200	ח	200	n	10	n	200	Þ	200	Þ
2-Hexanone	200	n	200	D	500	n	10	Þ	200	Þ		ם
Tetrachloroethene	25	p		D	25	Ω	ß	D	25	D	25	ם
1,1,2,2-Tetrachloroethane	25	n.	25	D	25	n	ហ	D	25	D	25	Þ
*= Outside of EPA CLP QC limits.												

Ĵ	10		J
	_	96LVQ015-MB1	25 U 25 U 25 U 25 U 25 U 25 U
	VBLKRU		
Page: 5b	VBLKRY	96LVQ018-MB1	25 U 25 U 25 U 25 U 25 U 25 U
Work Order: 02281012012 Page:	AFTOUT-VOST- AFTOUT-VOST-	028	5 U 5 U 5 U 5 U 5 U 6 U 6 U 6 U 6 U 7 U 6 U 7 U 7 U 7 U 7
Work Orde		R3-TF6B 027	25 U 25 U 25 U 25 U 25 U 3 25 U 1 100 U
GAS	AFTO	R3-TP6F 026	5 J 25 U 25 U 25 U 25 U
Client COR-HOT	Cust ID: AFTOUT-VOST-	R3-TP5B 025	25 U 25 U 25 U 25 U 25 U 3 J
	ıst I	RFW#:	ylether A CLP QC limits.
•	RFW Batch Number: 96021933		Toluene

Report Date: 02/20/96 16:01 Page:

Work Order: 02281012012 VOST TUBE BY GC/MS Client: COE-HOT GAS RFW Batch Number: 9602L953

96LVK031-MB1 96LVK031-MB1 96LVQ019-MB1 1.00 total ng 25 25 25 500 500 100 25 500 500 25 25 25 25 25 25 AIR 84 VBLKSR 1.00 ng/F 10 VBLKRO BS 1.00 ng/Ir 99 06 06 VBLKRO RFW#: 96LVQ017-MB1 1.00 total ng 500 500 25 500 25 500 25 25 100 25 25 125 109 118 Cust ID: VBLKRX 1,2-Dichloroethane-d4 Toluene-d8 **Bromofluorobenzene** *= Outside of EPA CLP QC limits. D.F.: Units: Matrix: 1,1,2,2-Tetrachloroethane Trans-1,3-Dichloropropene 1,2-Dichloroethene (trans) cia-1,3-Dichloropropene 1,1,2-Trichloroethane 1,1,1-Trichloroethane **Bromodichloromethane** Dibromochloromethane 4-Methyl-2-pentanone Carbon Tetrachloride 1,2-Dichloropropane_ 1,1-Dichloroethane_ 1,2-Dichloroethane 1,1-Dichloroethene Methylene Chloride retrachloroethene Carbon Disulfide Trichloroethene Vinyl Chloride Vinyl Acetate Chloromethane Chloroethane Bromomethane 2-Hexanone 2-Butanone Information Chloroform Bromoform Surrogate Recovery Benzene Acetone Sample

210

RFW Batch Number: 9602L953 Client: COE-HOT GAS	C1 i	ent: COR-HO	r GAS	Work Orde	Work Order: 02281012012 Fage: bp	Page: PD
Cus	Cust ID: VBLKRX	BLKRX	VBLKRO	VBLKRO BS	VBLKSE	
	RFW#: 9	6LVQ017-MB1	RFW#: 96LVQ017-MB1 96LVK031-MB1 96LVK031-MB1 96LVQ019-MB1	96LVK031-MB1	96LVQ019-MB1	
Toluene		25 U	5 U	108 %	25 U	
Chlorohenzene		25 U	5 U	105 %	25 U	
Ethyl benzene		25 U	5 U	5 U	25 U	
Styrene		25 U	5 0	5 U	25 U	
xylene (total)		25 U	2 O	5 U	25 U	
2-chloroethylvinylether		100 U	10 U	10 U	100 U	
171	limits.					

CASE NARRATIVE



LIONVILLE LABORATORY ANALYTICAL REPORT

Client: COE-HOT GAS RFW #: 9602L953 W.O #: 02281-012-012-9999-00 Date Received: 07 February 1996

GC/MS VOLATILE

The set of samples consisted of two (2) water samples and thirteen (13) air samples collected on VOST cartridges {i.e., pairs - front (tenax) and back (tenax/charcoal)} on 02,04 February 1996.

The samples were analyzed according to criteria set forth in SW 846 Method 5040/8240 for Volatile Organic target compounds on 09,10,11,12,13 February 1996.

The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

- 1. The required holding time for analysis was met.
- 2. Non-target compounds were detected in these samples.
- 3. Six (6) of one-hundred-two (102) surrogate recoveries were outside QC limits.
- All blank spike recoveries were within QC limits.
- 5. The method blanks contained the common contaminant Methylene Chloride at levels less than 3x the CRQL. The method blank 96LVQ018-MB1 also contained the target compounds Bromomethane and Benzene at levels less than the CRQL; the method blank 96LVQ015-MB1 also contained the target compound Benzene at a level less than the CRQL; the method blank 96LVQ019-MB1 also contained the target compound Bromomethane at a level less than the CRQL; and the method blank 96LVQ017-MB1 also contained the target compounds Chloromethane and Benzene at levels less than the CRQL.
- 6. Internal standard areas were outside QC limits for samples AFTOUT-VOST-R3-COND and AFTOUT-VOST-R2-TP2F. Sample AFTOUT-VOST-R3-COND was reanalyzed on 14 February 1996 and yielded similar results. The reanalysis results are available upon request.



- The calibration data has been reported using CLP Forms 6 and 7; however, VOST 7. calibrations should not be expected to meet the calibration criteria specified on these forms.
- The sample IDs were modified (truncated) to accommodate EPA nomenclature, which 8. allows twenty (20) characters.

FOR J. Michael Taylor Vice President and Laboratory Manager

Date

Lionville Analytical Laboratory

mmz/voa/02-953v.cn



GLOSSARY OF VOA DATA

DATA QUALIFIERS

U	=	Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
J	=	Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
В	=	This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
E	.	Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
D	=	Identifies all compounds identified in an analysis at a secondary dilution factor.
I	=	Interference.
NQ	=	Result qualitatively confirmed but not able to quantify.
N	=	Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
x	=	This_flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
Y	=	Additional qualifiers used as required are explained in the case narrative.



GLOSSARY OF VOA DATA

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Suffix added to sample number to indicate that results are from a diluted analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP, Z = Indicates Spiked Compound.



TECHNICAL FLAGS FOR MANUAL INTEGRATION

Manual quan modifications or integrations are performed routinely to improve the data quality for a variety of technical reasons. Documentation of these modifications should be clear and concise. The following "flags" are used to indicate the technical reasons for quan modifications:

- MP Missed Peak: manually added peak not found by automatic quan program.
- PA Peak Assignment: quan report was changed to reflect correct peak assignment.
- RI Routine Integration: routine integrations are performed for some analytes that are consistently integrated improperly by the automatic integration programs. Examples are the dichlorobenzene isomers on the VOA packed column and benzo(b)fluoranthene/benzo(k)fluoranthene which are poorly resolved on the BNA column.
- SP Split Peak: the automatic integration improperly split the peak; a manual integration was performed to get the correct area.
- CB Coelution/Background: peak was manually integrated to eliminate contribution from coeluting compounds, background signal, or other interference.
- Proper Integration: a peak with poor or inconsistent integration (e.g., excessive tail) was properly integrated manually.

OC SUMMARY

2A AIR VOLATILE SURROGATE RECOVERY

Contract: 02281-012-012-9999-00 Lab Name: ROY F. WESTON

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L953

					OMITTO	TOT
1	EPA	S1	S2	S3	OTHER	OUT
	SAMPLE NO.	(DCE)#	(TOL)#	(BFB)#		1 1
	=======================================	=====	=====	=====	=====	===
01	VBLKRU	98	127	101		0
02	AFTOUT-VOST-R2-TP1B	93	92	99		. 0
03	AFTOUT-VOST-R2-TP2B	78	84	113		- 1
04	AFTOUT-VOST-R2-TP3B	92	90	114		0
05	AFTOUT-VOST-R2-TP4B	90	85	125		0
06	VBLKRX	118	125	109		0
07	AFTOUT-VOST-R2-TP5B	105	106	129		0
08	AFTOUT-VOST-R2-TP6B	88	81	118		0
09	AFTOUT-VOST-SB-TP1B	96	110	101		0
10	AFTOUT-VOST-R3-TP1B	106	94	137		0
11	AFTOUT-VOST-R3-TP2B	117	104	179*		1 1
12	AFTOUT-VOST-R3-TP3B	108	101	165*		1
13	AFTOUT-VOST-R3-TP4B	121	107	190*		1 1
14	AFTOUT-VOST-R3-TP5B	111	116	179*		1 1 1
15	AFTOUT-VOST-R3-TP6B	116	111	179*		
16	VBLKRY	106	147	113		
17	AFTOUT-VOST-R2-TP1F	93	90	124		0
18	AFTOUT-VOST-R2-TP2F	65	106	113		0
19	AFTOUT-VOST-R2-TP3F	70	88	102		0
20	AFTOUT-VOST-R2-TP4F	95	99	133		0
21	AFTOUT-VOST-R2-TP5F	82	97	130		0
22	AFTOUT-VOST-R2-TP6F	68	102	113		
23	AFTOUT-VOST-SB-TP1F	83	90	124		0
24	AFTOUT-VOST-R3-TP1F	86	115	113		0
25	VBLKSE	79	93	84		
26	AFTOUT-VOST-R3-TP2F	108	96	109		
27	AFTOUT-VOST-R3-TP3F	124	95	140		0
28	AFTOUT-VOST-R3-TP4F	102	114	160*		1
29	AFTOUT-VOST-R3-TP5F	80	84	98		
	AFTOUT-VOST-R3-TP6F	92	96	125		
30	WE TOOT - AODI - 172 . IE OL	1	1	1	-	

QC LIMITS

S1 (DCE) = 1,2-Dichloroethane-d4 S2 (TOL) = Toluene-d8 S3 (BFB) = Bromofluorobenzene (50-150)

(50 - 150)(50-150)

Column to be used to flag recovery values

- * Values outside of contract required QC limits
- D Surrogates diluted out

page 1 of 2

FORM II VOA-1

2A WATER VOLATILE SURROGATE RECOVERY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L953

			S2	S3	OTHER	TOT
	EPA	S1 (DCE)#	(TOL)#	(BFB)#		OUT
	SAMPLE NO.	(DCE/#	(101)#	=====	=====	===
	=======================================	90	99	90		0
01	VBLKRO	98	98	93		0
02	VBLKROMS AFTOUT-VOST-R2-COND	96	102	98		0
03	AFTOUT-VOST-R3-COND	98	100	96		
04	AF 1001 1001					
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19 20 21 22 23 24 25 26 27 29						
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30		. 1			TIMTTO	

S1 (DCE) = 1,2-Dichloroethane-d4 (76-114) S2 (TOL) = Toluene-d8 (88-110) S3 (BFB) = Bromofluorobenzene (86-115)

- # Column to be used to flag recovery values
- * Values outside of contract required QC limits
- D Surrogates diluted out

page 1 of 1

FORM II VOA-1

FORM 3 WATER VOLATILE BLANK SPIKE RECOVERY

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L953

Matrix Spike - EPA CLP PR Sample No.: VBLKRO

Benzene 50.000 0.0000 54.030 108 76-12	Toluene	(UG/L) ======= 50.000 50.000 50.000 50.000	F :	1		QC. LIMITS REC. ===== 61-145 71-120 76-127 76-125 75-130
--	---------	---	-----	---	--	--

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 0 outside limits Spike Recovery: 0 out of 5 outside limits

COMMENTS:	

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code: Case No.: SAS No.: SDG No.: 9602L953

Lab File ID: K2905

Lab Sample ID: 96LVK031-MB1

Date Analyzed: 02/09/96

Time Analyzed: 1449

Matrix: (soil/water) WATER

Level: (low/med) LOW

Instrument ID: 5970K

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

		LAB	LAB	TIME
	EPA			ANALYZED
	SAMPLE NO.	SAMPLE ID	FILE ID	ANALIZED
	SAMPLE NO.		=========	=======
	_===========	OCT TWO 21 - MP1S	K2906	1532
01	VBLKROMS	96LVK031-MB1S		1724
02	AFTOUT-VOST-R2-COND	9602L953-013	K2909	1/24
02	AFTOUT-VOST-R3-COND	9602L953-028	K2910	1759
03	AF 1001 - VOS1 - R5 - CONS	300223		
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COMMENTS:	

page 1 of 1

FORM IV VOA

- .,		DOV	E	WESTON	Contract:	02281-012-012-9999-00
Lab	Name:	ROY	r.	WESTON		

Lab Code: Case No.: SAS No.: SDG No.: 9602L953

Lab File ID: Q021005

Lab Sample ID: 96LVQ015-MB1

Date Analyzed: 02/10/96

Time Analyzed: 1621

Matrix: (soil/water) AIR

Level:(low/med)

Instrument ID: 1050Q

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	EPA	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
	SAMPLE NO.	SAMPLE ID	=======================================	========
01	AFTOUT-VOST-R2-TP1B	9602L953-002	Q021009	1949
02	AFTOIT-VOST-R2-TP2B	9602L953-004	0021010	2036 2203
03	AFTOUT-VOST-R2-TP3B	9602L953-006 9602L953-008	Q021012 Q021013	2247
04	AFTOUT-VOST-R2-TP4B	960211933-000	Q022020	·
05 06				
07				
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09 10				
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11 12 13				
13 14				
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COMMENTS:	

page 1 of 1

FORM IV VOA

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.: SAS No.: SDG No.: 9602L953

Lab File ID: Q021106

Lab Sample ID: 96LVQ017-MB1

Date Analyzed: 02/11/96

Time Analyzed: 1634

Matrix: (soil/water) AIR

Level: (low/med)

Instrument ID: 1050Q

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	LAB	LAB	TIME
EPA		FILE ID	ANALYZED
SAMPLE NO.	SAMPLE ID	1	ANALIZED
	== ============	==========	
01 AFTOUT-VOST-R2-TP5	B 9602L953-010	Q021107	1716
01 AFTOUT-VOST-R2-TP5	· I	Q021109	1833
02 AFTOUT-VOST-R2-TP6		Q021110	1912
03 AFTOUT-VOST-SB-TP1	B 9602L953-015	0021110	1949
04 AFTOUT-VOST-R3-TP1	B 9602L953-017	Q021111	
05 AFTOUT-VOST-R3-TP2	B 9602L953-019	Q021112	2027
OS AFTOUT-VOST RO TES		Q021113	2103
06 AFTOUT-VOST-R3-TP3		Q021114	2141
07 AFTOUT-VOST-R3-TP4		Q021117	2357
08 AFTOUT-VOST-R3-TP5	B 9602L953-025	0021117	0103
09 AFTOUT-VOST-R3-TP6	B 9602L953-027	Q021119	1 0103
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COMMENTS:	

page 1 of 1

FORM IV VOA

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.: SAS No.: SDG No.: 9602L953

Lab File ID: Q021218

Lab Sample ID: 96LVQ018-MB1

Date Analyzed: 02/12/96

Time Analyzed: 1859

Matrix: (soil/water) AIR

Level:(low/med)

Instrument ID: 1050Q

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

		LAB	LAB	TIME
	EPA	SAMPLE ID	FILE ID	ANALYZED
	SAMPLE NO.			
	=======================================	=======================================		2045
01	AFTOUT-VOST-R2-TP1F	9602L953-001	Q021219	2045
02	AFTOUT-VOST-R2-TP2F	9602L953-003	Q021220	2141
03	AFTOUT-VOST-R2-TP3F	9602L953-005	Q021221	2229
04	AFTOUT-VOST-R2-TP4F	9602L953-007	Q021222	2325
05	AFTOUT-VOST-R2-TP5F	9602L953-009	Q021223	0009
	AFTOUT-VOST-R2-TP6F	9602L953-011	Q021224	0059
06	AFTOUT-VOST-R2-IPOF	9602L953-014	Q021225	0141
07	AFTOUT-VOST-SB-TP1F	9602L953-014	Q021226	0223
08	AFTOUT-VOST-R3-TP1F	96070323-016	Q021226	0223
09				
10				
11				
12				
13				
14				
15				
16				
17				
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19				
7.2				
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COMMENTS:	

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FORM IV VOA

Lab Name: ROY F. WESTON Contract: 02281-012-012-9999-00

Lab Code: Case No.: SAS No.:

SDG No.: 9602L953

Lab Sample ID: 96LVQ019-MB1

Lab File ID: Q021305

Time Analyzed: 1018

Date Analyzed: 02/13/96

Matrix: (soil/water) AIR

Level:(low/med)

Instrument ID: 1050Q

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

		LAB	TIME
EPA	LAB	FILE ID	ANALYZED
SAMPLE NO.	SAMPLE ID	LIDE ID	
=================================		=======================================	1155
01 AFTOUT-VOST-R3-TP2F	9602L953-018	Q021306	1459
01 AFTOUT-VOST-R3-TP2F 02 AFTOUT-VOST-R3-TP3F	9602L953-020	Q021309	
02 AFTOUT-VOST-R3-TP3F	9602L953-022	Q021310	1602
03 AFTOUT-VOST-R3-TP4F	9602L953-024	Q021311	1654
04 AFTOUT-VOST-R3-TP5F	9602L953-026	Q021312	1731
05 AFTOUT-VOST-R3-TP6F	960211955-020	20220	
06			
07			
08			
09			
10			
11 12			
13			
13			
15			
16			
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27	_		
28	-		
29			
30		.	. !

COMMENTS:	

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FORM IV VOA

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L953

Lab File ID: K2404

BFB Injection Date: 02/04/96

Instrument ID: 5970K

BFB Injection Time: 1107

Matrix: (soil/water) WATER Level: (low/med) LOW Column: (pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50 75 95 96 173 174 175 176	15.0 - 40.0% of mass 95 30.0 - 60.0% of mass 95 Base Peak, 100% relative abundance 5.0 - 9.0% of mass 95 Less than 2.0% of mass 174 50.0 - 100.0% of mass 95 5.0 - 9.0% of mass 174 95.0 - 100.9% of mass 174 5.0 - 9.0% of mass 176	19.9 50.9 100.0 7.5 0.0 (0.0)1 80.0 6.3 (7.9)1 79.7 (99.6)1 4.8 (6.0)2
	Table is a of mass 174 2-Value is a of mass 174	ass 176

1-Value is % of mass 174

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

		LAB	LAB	DATE	TIME
	EPA SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
	SAMPLE NO.	=======================================	=======================================	========	========
01	VSTD200	VSTD200	K2405	02/04/96	1122
02	VSTD100	VSTD100	K2406	02/04/96	1158
03	VSTD020	VSTD020	K2407	02/04/96 02/04/96	1233
04	VSTD010	VSTD010	K2408 K2409	02/04/96	1347
05 06	VSTD050	VSTD050	K2409	02/04/50	134,
07					
08					
09					
10					
11					
12 13					
14					
15					
16					
17					
18					
19 20					
21					
22					

5A VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.: SAS No.:

SDG No.: 9602L953

Lab File ID: K2901

BFB Injection Date: 02/09/96

BFB Injection Time: 1217

Instrument ID: 5970K

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

m/o	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
m/e ===== 50 75 95 96 173 174 175 176	15.0 - 40.0% of mass 95 30.0 - 60.0% of mass 95 Base Peak, 100% relative abundance 5.0 - 9.0% of mass 95 Less than 2.0% of mass 174 50.0 - 100.0% of mass 95 5.0 - 9.0% of mass 174 95.0 - 100.9% of mass 174 95.0 - 9.0% of mass 176	20.7 50.8 100.0 7.4 0.0 (0.0)1 86.2 6.7 (7.8)1 83.5 (96.8)1 5.4 (6.5)2
	1-Value is % of mass 174 2-Value is % of m	ass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

-	EPA	LAB	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
_	SAMPLE NO.	SAMPLE ID	=======================================	=======	1310
02 V 03 V	STD050 BLKRO BLKROMS FTOUT-VOST-R2-COND FTOUT-VOST-R3-COND	VSTD050 96LVK031-MB1 96LVK031-MB1S 9602L953-013 9602L953-028	K2903 K2905 K2906 K2909 K2910	02/09/96 02/09/96 02/09/96 02/09/96 02/09/96	1310 1449 1532 1724 1759
08 -					
10 -					
12 -					
14 - 15 -					
17 -					
19 -					
21 -					

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1/87 Rev FORM V VOA

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Contract: 02281-012-012-9999-00 Lab Name: ROY F. WESTON

Case No.: Lab Code:

SAS No.:

SDG No.: 9602L953

Lab File ID: Q020801

BFB Injection Date: 02/08/96

BFB Injection Time: 1357

Instrument ID: 1050Q

Matrix:(soil/water) AIR Level:(low/med) LOW Column:(pack/cap) CAP

	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
m/e ===== 50 75 95 96 173 174 175 176	ION ABUNDANCE CRITERIA ===================================	15.4 39.0 100.0 7.6 0.0 (0.0)1 90.7 6.6 (7.3)1 90.5 (99.8)1 7.1 (7.9)2

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 02 03 04 05 06	VSTD500 VSTD1000 VSTD1000 VSTD1000	VSTD500 VSTD1000 VSTD2000 VSTD100	Q020803 Q020804 Q020805 Q020807	02/08/96 02/08/96 02/08/96 02/08/96	1518 1600 1636 1749
07 08 09 10 11					· · · · · · · · · · · · · · · · · · ·
13 14 15 16 17					
18 19 20 21 22					

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FORM V VOA

5A VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L953

BFB Injection Date: 02/10/96

Lab File ID: Q021001

Instrument ID: 1050Q

BFB Injection Time: 1225

Matrix: (soil/water) AIR Level: (low/med) LOW Column: (pack/cap) CAP

1		% RELATIVE ABUNDANCE
m/e	ION ABUNDANCE CRITERIA	=======================================
=====	15.0 - 40.0% of mass 95	22.3
50	20 0 CO 0% of mass 95	46.4
75 95	Base Peak, 100% relative abundance	100.0
96	5 0 - 9 0% of mass 95	0.0 (0.0)1
173	Tess than 2.0% of mass 1/4	57.3
174	50.0 - 100.0% of mass 95	3.9 (6.7)1
175	5.0 - 9.0% of mass 174	57.7 (100.6)1
176	95.0 - 100.9% of mass 174	4.0 (7.0)2
177	5.0 - 9.0% of mass 176	
1	1-Value is % of mass 174 2-Value is % of m	ass 1/6

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA	LAB	LAB	DATE	TIME
SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
01 VSTD500 02 VBLKRU 03 AFTOUT-VOST-R2-TP1B 04 AFTOUT-VOST-R2-TP2B 05 AFTOUT-VOST-R2-TP3B AFTOUT-VOST-R2-TP4B 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22	VSTD500 96LVQ015-MB1 9602L953-002 9602L953-006 9602L953-008	Q021003 Q021005 Q021009 Q021010 Q021012 Q021013	02/10/96 02/10/96 02/10/96 02/10/96 02/10/96 02/10/96	1440 1621 1949 2036 2203 2247

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FORM V VOA

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L953

Lab File ID: Q021101

BFB Injection Date: 02/11/96

Instrument ID: 1050Q

BFB Injection Time: 1309

Matrix: (soil/water) AIR Level: (low/med) LOW Column: (pack/cap) CAP

B142120196

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
===== 50 75 95 96 173 174 175 176	15.0 - 40.0% of mass 95 30.0 - 60.0% of mass 95 Base Peak, 100% relative abundance 5.0 - 9.0% of mass 95 Less than 2.0% of mass 174 50.0 - 100.0% of mass 95 5.0 - 9.0% of mass 174 95.0 - 100.9% of mass 174 95.0 - 9.0% of mass 176	19.7 43.8 100.0 6.6 0.0 (0.0)1 62.6 4.5 (7.1)1 61.7 (98.4)1 4.9 (8.0)2
1	1-Value is % of mass 174 2-Value is % of mass 174	ass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA	LAB	LAB	DATE	TIME
SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
01 VSTD500 02 VBLKRX 03 AFTOUT-VOST-R2-TP5B 04 AFTOUT-VOST-R2-TP6B 05 AFTOUT-VOST-SB-TP1B 06 AFTOUT-VOST-R3-TP1B 07 AFTOUT-VOST-R3-TP2B 08 AFTOUT-VOST-R3-TP3B 09 AFTOUT-VOST-R3-TP6B 10 AFTOUT-VOST-R3-TP6B 11 AFTOUT-VOST-R3-TP6B 12	VSTD500 96LVQ017-MB1 9602L953-010 9602L953-015 9602L953-017 9602L953-019 9602L953-021 9602L953-023 9602L953-025 9602L953-025	Q021103 Q021106 Q021107 Q021109 Q021110 Q021111 Q021112 Q021113 Q021114 Q021117 Q021119	02/11/96 02/11/96 02/11/96 02/11/96 02/11/96 02/11/96 02/11/96 02/11/96 02/11/96 02/11/96	1424 1634 1716 1833 1912 1949 2027 2103 2141 2357 0103

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Contract: 02281-012-012-9999-00 Lab Name: ROY F. WESTON

Case No.: SAS No.: Lab Code:

SDG No.: 9602L953

Lab File ID: Q021202

BFB Injection Date: 02/12/96

Instrument ID: 1050Q

BFB Injection Time: 0155

Matrix:(soil/water) AIR Level:(low/med) LOW Column:(pack/cap) CAP

BKR 2120 90

		O POT A COTTO
m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50 75 95 96	15.0 - 40.0% of mass 95 30.0 - 60.0% of mass 95 Base Peak, 100% relative abundance 5.0 - 9.0% of mass 95	21.4 48.3 100.0 7.3 0.0 (0.0)1
173 174 175 176	Less than 2.0% of mass 174	65.9 4.7 (7.1)1 66.0 (100.2)1 4.6 (7.0)2
	1-Value is % of mass 174 2-Value is % of mass 174	ass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01 VSTD1000 02 VSTD2000 03 VSTD500 04 VSTD100	VSTD1000 VSTD2000 VSTD500 VSTD100	Q021205 Q021206 Q021207 Q021212	02/12/96 02/12/96 02/12/96 02/12/96	0359 0437 0527 1309
06 07 08 09 10				
12 13 14 15 16				
17 18 19 20 21 22				

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FORM V VOA

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5A VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Contract: 02281-012-012-9999-00 Lab Name: ROY F. WESTON

SDG No.: 9602L953 SAS No.: Case No.:

BFB Injection Date: 02/12/96 Lab File ID: Q021214

BFB Injection Time: 1600

Matrix:(soil/water) AIR Level:(low/med) LOW Column:(pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50 75 95 96 173 174 175 176	15.0 - 40.0% of mass 95 30.0 - 60.0% of mass 95 Base Peak, 100% relative abundance 5.0 - 9.0% of mass 95 Less than 2.0% of mass 174 50.0 - 100.0% of mass 95 5.0 - 9.0% of mass 174 95.0 - 100.9% of mass 174 95.0 - 9.0% of mass 174	19.4 44.8 100.0 7.2 0.0 (0.0)1 68.2 5.0 (7.4)1 68.8 (100.8)1 4.5 (6.6)2
	1-Value is % of mass 174 2-Value is % of mass 174	ass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA	LAB	LAB	DATE	TIME
SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
01 VSTD500 02 VBLKRY 03 AFTOUT-VOST-R2-TP1F 04 AFTOUT-VOST-R2-TP2F 05 AFTOUT-VOST-R2-TP3F 06 AFTOUT-VOST-R2-TP4F 07 AFTOUT-VOST-R2-TP6F 09 AFTOUT-VOST-R2-TP6F 10 AFTOUT-VOST-R3-TP1F 11 12 13 14 15 16 17 18 19 20 21 22 2	VSTD500 96LVQ018-MB1 9602L953-001 9602L953-005 9602L953-007 9602L953-009 9602L953-011 9602L953-014	Q021216 Q021218 Q021219 Q021220 Q021221 Q021222 Q021223 Q021224 Q021225 Q021226	02/12/96 02/12/96 02/12/96 02/12/96 02/12/96 02/13/96 02/13/96 02/13/96 02/13/96	1723 1859 2045 2141 2229 2325 0009 0059 0141 0223

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Lab Code:

FORM V VOA

VOLATILE ORGANIC GC/MS TUNING AND MASS CALIBRATION - BROMOFLUOROBENZENE (BFB)

Contract: 02281-012-012-9999-00 Lab Name: ROY F. WESTON

Lab Code: Case No.: SAS No.:

SDG No.: 9602L953

Lab File ID: Q021301

BFB Injection Date: 02/13/96

Instrument ID: 1050Q 7/21/46

BFB Injection Time: 0650

Matrix:(soil/water) ATA Level:(low/med) LOW Column:(pack/cap) CAP

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
===== 50 75 95 96 173 174 175 176	15.0 - 40.0% of mass 95 30.0 - 60.0% of mass 95 Base Peak, 100% relative abundance 5.0 - 9.0% of mass 95 Less than 2.0% of mass 174 50.0 - 100.0% of mass 95 5.0 - 9.0% of mass 174 95.0 - 100.9% of mass 174 95.0 - 9.0% of mass 176	18.3 42.4 100.0 6.2 0.0 (0.0)1 66.2 4.4 (6.6)1 66.7 (100.7)1 4.7 (7.0)2
	1-Value is % of mass 174 2-Value is % of mass 174	ass 176

THIS TUNE APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

EPA	LAB	LAB	DATE	TIME
SAMPLE NO.	SAMPLE ID	FILE ID	ANALYZED	ANALYZED
SAMPLE NO. ====================================	VSTD500 96LVQ019-MB1 9602L953-020 9602L953-022 9602L953-024 9602L953-026	Q021303 Q021305 Q021306 Q021309 Q021310 Q021311 Q021312	02/13/96 02/13/96 02/13/96 02/13/96 02/13/96 02/13/96 02/13/96	0824 1018 1155 1459 1602 1654 1731

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FORM V VOA

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Contract: 02281-012-012-9999-00 Lab Name: ROY F. WESTON

Lab Code:

Case No.:

SAS No.:

SDG No.: 9602L953

Lab File ID (Standard): K2903

Date Analyzed: 02/09/96

Time Analyzed: 1310 Instrument ID: 5970K

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) CAP

		TOT (DOM)		IS2(DFB)		IS3(CBZ)	
		IS1(BCM) AREA #	RT	AREA #	RT	AREA #	RT =====
	======================================	33265	7.37	117090	10.04	95025	16.73
	UPPER LIMIT	66530	7.87	234180	10.54	190050	17.23
	LOWER LIMIT	16632	6.87	58545	9.54	47512	16.23
	EPA SAMPLE NO.		=====				
01 02 03 04 05	VBLKRO VBLKROMS AFTOUT-VOST-R2-COND AFTOUT-VOST-R3-COND	31488 28385 24299 11732*	7.40 7.41 7.42 7.39	111067 97920 85463 41601*	10.06 10.08 10.08 10.06	90926 82571 70866 34682*	16.77 16.79 16.77 16.77
06 07 08							
09 10 11							
11 12 13 14 15 16 17 18 19 20 21 22							
16 17 18							
19							
21							

= Bromochloromethane (BCM) IS1

UPPER LIMIT = +100%

= 1,4-Difluorobenzene (DFB) IS2 = Chlorobenzene-d5 (CBZ) IS3

of internal standard area.

LOWER LIMIT = - 50%

of internal standard area.

Column used to flag internal standard area values with an asterisk.

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FORM VIII VOA

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Case No.:

SAS No.:

SDG No.: 9602L953

Lab Code:

Date Analyzed: 02/10/96

Lab File ID (Standard): Q021003

Time Analyzed: 1440

Instrument ID: 1050Q

Matrix:(soil/water) AIR Level:(low/med) LOW Column:(pack/cap) CAP

	IS1 (BCM)	RT	IS2(DFB) AREA #	RT	IS3(CBZ) AREA #	RT
	AREA #	====== K1	========	=====	408945	19.37
12 HOUR STD	64073	13.40	388304	15.15	408945	=====
=======================================	128146	13.90	776608	15.65	817890	19.87
UPPER LIMIT	========	12.90	194152	14.65	204472	18.87
LOWER LIMIT	32036	======	========	=====	=======	=====
EPA SAMPLE						
NO.	========	=====	========	=====	=========	19.35
====================================	54534	13.40 13.42	329131 320130	15.13 15.15	280207 319333	19.38
2 AFTOUT-VOST-R2-TP1B	60931 66334	13.42	402863	15.13	411670	19.35
A PTOUT-VOST-R2-TP3B	64599	13.42	365282 417310	15.15 15.15	390272 452388	19.37
5 AFTOUT-VOST-R2-TP4B	76089	13.40	417310			
67						
8						
9						\ <u> </u>
1						
2						-
4		\ <u></u>				
5				.		-
7		.				
8				-		-
0						-
1					.	_

= Bromochloromethane (BCM) IS1 = 1,4-Difluorobenzene (DFB) IS2 = Chlorobenzene-d5 (CBZ) IS3

UPPER LIMIT = +100% of internal standard area.

LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

page 1 of 1

FORM VIII VOA

Lab Name: ROY F. WESTON Contract: 02281-012-012-9999-00

Lab Code: Case No.: SAS No.: SDG No.: 9602L953

Lab File ID (Standard): Q021103 Date Analyzed: 02/11/96

Instrument ID: 1050Q Time Analyzed: 1424

Matrix: (soil/water) AIR Level: (low/med) LOW Column: (pack/cap) CAP

					= = = / == = 1	
	IS1 (BCM)		IS2(DFB)		IS3(CBZ)	
	AREA #	RT	AREA #	RT	AREA #	RT
	AREA T					=====
	========	=====	200110	15.15	362053	19.37
12 HOUR STD	60428	13.42	382112	12.12	362033	19.3/
12 110011 010	========	=====	=======	=====	=======	=====
======================================	120856	13.92	764224	15.65	724106	19.87
UPPER LIMIT	120050	======				=====
=======================================	========	1	101056	14.65	181026	18.87
LOWER LIMIT	30214	12.92	191056	14.05	101020	10.07
		=====	========	=====	_========	=====
EPA SAMPLE						
		ļ	! "	ļ	ł	ļ
NO.						=====
=======================================	========	======	20550	1	202757	19.37
01 VBLKRX	53830	13.42	325586	15.15	292751	
02 AFTOUT-VOST-R2-TP5B	51784	13.40	333278	15.13	342401	19.37
	59503	13.40	361682	15.13	382517	19.37
03 AFTOUT-VOST-R2-TP6B	57343	13.40	374774	15.13	335732	19.37
04 AFTOUT-VOST-SB-TP1B			1	15.13	369346	19.37
05 AFTOUT-VOST-R3-TP1B	59689	13.40	342751			
06 AFTOUT-VOST-R3-TP2B	68310	13.40	388538	15.13	427960	19.37
07 AFTOUT-VOST-R3-TP3B	66381	13.42	392428	15.15	423803	19.38
O/ AFTOUT-VOST-RO TIDE	66544	13.42	375930	15.15	408906	19.37
08 AFTOUT-VOST-R3-TP4B			362122	15.15	382911	19.38
09 AFTOUT-VOST-R3-TP5B	56585	13.42)			b
10 AFTOUT-VOST-R3-TP6B	61284	13.40	352164	15.13	383217	19.37
11		1	i			
	-					
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19				1		
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IS1 (BCM) = Bromochloromethane UPPER LIMIT = +100% of internal standard area.

IS3 (CBZ) = Chlorobenzene-d5 LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

Column used to flag internal standard area values with an asterisk.

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FORM VIII VOA

Lab Name: ROY F. WESTON

Contract: 02281-012-012-9999-00

Lab Code:

Case No.: SAS No.:

SDG No.: 9602L953

Date Analyzed: 02/12/96

Lab File ID (Standard): Q021216

Time Analyzed: 1723

Instrument ID: 1050Q

Matrix:(soil/water) AIR Level:(low/med) LOW Column:(pack/cap) CAP

				75 55		IS3(CBZ)	
!		IS1(BCM) AREA #	RT	IS2(DFB) AREA #	RT	AREA #	RT =====
	======================================	55850	13.40	322151	15.13	277119	19.37
	======================================	111700	13.90	644302	15.63	554238	19.87
	LOWER LIMIT	======== 27925	12.90	161076	14.63	138560	18.87
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01 02	VBLKRY AFTOUT-VOST-R2-TP1F	46511 58528	13.40 13.40	278739 381020	15.13	196478 390990 178835	19.35
03	AFTOUT-VOST-R2-TP2F AFTOUT-VOST-R2-TP3F	20689* 39272	13.42	202762 324086	15.13 15.12 15.13	321088 386271	19.35
05 06	AFTOUT-VOST-R2-TP4F AFTOUT-VOST-R2-TP5F	51871 46687	13.40	362509 346682 300765	15.13 15.13 15.13	342772 275524	19.37
07 08	AFTOUT-VOST-R2-TP6F AFTOUT-VOST-SB-TP1F	33639 57764	13.40 13.40 13.38	412484 408131	15.13	429697 364517	19.35
09 10	AFTOUT-VOST-R3-TP1F	57303	13.36	400131			
11 12							
13 14							
15 16							
17 18							
19 20							
21 22							

(BCM) = Bromochloromethane IS1 (DFB) = 1,4-Difluorobenzene IS2

UPPER LIMIT = +100% of internal standard area.

LOWER LIMIT = - 50%

(CBZ) = Chlorobenzene-d5 of internal standard area.

Column used to flag internal standard area values with an asterisk.

page 1 of 1

IS3

FORM VIII VOA

Lab Name: ROY F. WESTON Contract: 02281-012-012-9999-00

Lab Code: Case No.: SAS No.:

SDG No.: 9602L953

Lab File ID (Standard): Q021303

Date Analyzed: 02/13/96

Instrument ID: 1050Q Time Analyzed: 0824

Matrix: (soil/water) AIR Level: (low/med) LOW Column: (pack/cap) CAP

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		IS1(BCM) AREA #	RT	IS2 (DFB) AREA #	RT	IS3(CBZ) AREA #	RT
		========	=====	========	=====	========	======
	12 HOUR STD	54583	13.38	388751	15.12	337828	19.35
	TENDED LIMIT	109166	13.88	777502	15.62	675656	19.85
	UPPER LIMIT		=====	=======	=====	=======	=====
	LOWER LIMIT	27292	12.88	194376	14.62	168914	18.85
	=======================================	========	=====	=======			
	EPA SAMPLE NO.						
	NO.	========	=====	=======	=====	=======	=====
01	VBLKSE	45778	13.38	330378	15.12	246161	19.35
02	AFTOUT-VOST-R3-TP2F	56927	13.38	357261	15.12	318660	19.35
03	AFTOUT-VOST-R3-TP3F	48844	13.38	295315	15.12	283486	19.35
04	AFTOUT-VOST-R3-TP4F	35498	13.40	276858	15.13	251379	19.35
05	AFTOUT-VOST-R3-TP5F	32037	13.40	245577	15.13	215215	19.35
06	AFTOUT-VOST-R3-TP6F	37432	13.38	278136	15.12	259141	19.33
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IS1 (BCM) = Bromochloromethane

UPPER LIMIT = +100%

IS2 (DFB) = 1,4-Difluorobenzene IS3 (CBZ) = Chlorobenzene-d5 of internal standard area.

LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk.

page 1 of 1

FORM VIII VOA

DIOXINS AND FURANS



CASE NARRATIVE

Analysis of Samples for the Presence of Polychlorinated Dibenzo-p-Dioxins and Dibenzofurans by High-Resolution Chromatography / High-Resolution Mass Spectrometry

Method 23 (6/93)

Date:

February 21, 1996

Client ID:

Roy F. Weston, Inc.

P.O. Number:

TLI Project Number:

36062

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Rev. 06/02/95

Triangle Laboratories, Inc.

801 Capitola Drive Durham, NC 27713-4411 919-544-5729

P.O. Box 13485 Research Triangle Park, NC 27709-3485

Fax # 919-544-5491

Overview

Two M23 samples were received from Roy F. Weston, Inc. at 11 °C on February 02, 1996 under TLI project number 36049. Three more M23 samples were received on February 6, 1996 at 4°C. All samples were received in good condition and were stored in a refrigerator at 4°C. The samples and any associated QC samples were extracted and analyzed according to procedures described in the Triangle Laboratories' Data User's Manual (Rev. 12/92-HK-2-AH-2/93). Any particular difficulties encountered during the sample handling by Triangle Laboratories will be discussed in the QC Remarks section below. Results reported relate only to the items tested.

Quality Control Samples

A laboratory method blank, identified as the TLI Blank, was prepared along with the samples.

Quality Control Remarks

This release of this particular set of Roy F. Weston, Inc. analytical data by Triangle Laboratories was authorized by the Quality Control Chemist who has reviewed each sample data package individually following a series of inspections/reviews. When applicable, general deviations from acceptable QC requirements are identified below and comments are made on the effect of these deviations upon the validity and reliability of the results. Please consult Triangle Laboratories' Data User's Manual for further details. Specific QC issues associated with this particular project are:

Sample Preparation Laboratory: As per client's request, sample COE-HG-OUT-M23-SB was extracted and put on hold without having been analyzed until further notice.

Mass Spectrometry: The archived extract of sample COE-HG-AFTOUT-M23-R3 has been scheduled for fractionation due to very low internal standard recoveries upon initial analysis. The results of this sample will be forwarded as soon as they are available.

Data Review: None

Other Comments: Any analytes found in the TLI Blank are detected at a level equal to or less than the Target Detection Limit. This level of contamination is acceptable as per TLI guidelines. OCDD is not subject to blank contamination criteria as per TLI guidelines.

Sample Calculations:

Analyte Concentration

The amount of any analyte is calculated using the following expression.

Where:

 $Amt_{(\sigma)}$ is the amount of a given analyte,

 \boldsymbol{A}_{σ} is the integrated current for the characteristic ions of the analyte,

 $A_{\boldsymbol{\beta}}$ is the integrated current of the characteristic ions of the corresponding internal standard,

 Q_{β} represents the amount of internal standard added to the sample before extraction,

 $RRF_{(\sigma)}$ is the mean analyte relative response factor from the initial calibration (ICal) and,

W is the sample weight or volume (W = 1 for M23)

The amount is expressed in nanograms (ng) or picograms (pg).

Detection Limits

The detection limit reported for a target analyte that is not detected or presents an analyte response that is less than 2.5 times the background level is calculated by using the following expression. The area of the analyte is replaced by the noise level measured in a region of the chromatogram clear of genuine GC signals multiplied by an empirically determined factor. The detection limits represent the maximum possible concentration of a target analyte that could be present without being detected.

$$DL_{(\sigma)} = \frac{2 * 2.5 * (F * H) * Q_{\beta}}{A_{\beta} * RRF_{(\sigma)} * W}$$

Where:

 $DL_{(\sigma)}$ is the estimated detection limit for a target analyte,

2.5 is the minimum response required for a GC signal,

F is an empirical number that approximates the area to height ratio for a GC signal. This number is 5 for the DB-5 GC column and 3.5 for the DB-225 GC column,

H is the height of the noise

 A_{β} is the integrated current of the characteristic ions of the corresponding internal standard,

 Q_{β} represents the amount of internal standard added to the sample before extraction,

 $RRF_{(\sigma)}$ is the mean analyte relative response factor from the initial calibration (ICal) and,

W is the sample weight or volume

The detection limit is expressed in nanograms (ng) or picograms (pg).

Other sample calculations may be found in the Triangle Laboratories Data User's Manual.

Data Flags

In order to assist with data interpretation, data qualifier flags are used on the final reports, as discussed in Triangle Laboratories' Method 23 Data User's Manual. Please note that all data qualifier flags are subjective and are applied as consistently as possible. Each flag has been reviewed by two independent Chemists and the impact of the data qualifier flag on the quality of the data discussed above. The most commonly used flags are:

A 'B' flag is used to indicate that an analyte has been detected in the laboratory method blank as well as in an associated field sample. The 'B' flag will be used only when the concentration of analyte found in the sample is less than 20 times that found in the associated blank. This flag denotes possible contribution of background laboratory contamination to the concentration or amount of that analyte detected in the field sample. Under Triangle Laboratories guidelines, a laboratory blank is acceptable if the tetrathrough hepta-CDD/CDF levels are all below the target detection limits (TDLS) or if the contamination levels are less than 5% of the levels detected in the associated field samples. If these conditions are satisfied or if the blank is unable to be reextracted, the interpretation of the contamination levels relative to the samples should be as follows: 1) analyte quantitations should be considered valid if the level of blank contamination is less than five percent of the level detected in the field sample, 2) analyte quantitations should be considered estimated if the analyte level in the sample is five to twenty times the level

of the analyte in the blank, or 3) analytes whose level in a sample is the same as or less than five times the level detected in the associated blank should be considered present likely due to laboratory contamination and not native to the sample.

An 'E' flag is used to indicate that an PCDF peak has eluted at the sample time as the associated diphenyl ether (DPE) and that the DPE peak intensity is ten percent or more of the PCDF peak intensity. Total PCDF values are flagged 'E' if the total DPE contribution to the total PCDF value is greater than ten percent. All PCDF peaks that are significantly influenced by the presence of DPE peaks are quantitated with EMPC values, regardless of the isotopic abundance ratio. These EMPC values are most likely overestimated due to the DPE contribution to the peak area.

An 'I' flag is used to indicate labeled standards have been interfered with on the GC column by coeluting, interferent peaks. The interference may have caused the standard's area to be overestimated. All quantitations relative to this standard, therefore, may be underestimated.

A 'PR' flag is used to indicate that a GC peak is poorly resolved. This resolution problem may be seen as two closely eluting peaks without a reasonable valley between the peak tops, overly broad peaks, or peaks whose shapes vary greatly from a normal distribution. The concentrations or amounts reported for such peaks are most likely overestimated.

A 'Q' flag is used to indicate the presence of QC ion instabilities caused by quantitative interferences. Affected analytes may be overestimated or underestimated as a result of this interference. A peak is flagged 'Q' only if it is affected by a QC ion deviation greater than 20% full scale as determined relative to the labeled standard against which it is quantitated. Total PCDF/PCDF quantitations will be flagged 'Q' if the interferences affect ten percent or more of the total PCDD/PCDF peak areas.

An 'RO' flag is used to indicate that a labeled standard has an ion abundance ratio that is outside of the acceptable QC limits, most likely due to a coeluting interference. This may have caused the percent recovery of the standard to be overestimated. All quantitations versus this standard, therefore, may be underestimated.

A 'U' flag is used to indicate that a specific (2,3,7,8-substituted) isomer cannot be resolved from a large, coeluting interferent GC peak. The specific isomer is reported as not detected as a valid concentration/amount cannot be determined. The calculated detection limit, therefore, should be considered an underestimated value.

A 'V' flag is used to indicate that, although the percent recovery of a labeled standard may be below a specific QC limit, the signal-to-noise ratio of the peak is greater than ten-to-one. The standard is considered reliably quantifiable. All quantitations derived from the standard are considered valid as well.

By our interpretation, the analytical data in this project are valid based on the guidelines of EPA Method 23 (6/93) and Triangle Laboratories' Method 23 Data User's Manual. Any specific QC concerns or problems have been discussed in the QC Remarks section of this case narrative with emphasis on their effect on the data. Should Roy F. Weston, Inc. have any questions or comments regarding this data package, please feel free to contact our Project Scientist Selena Armistead, at 919/544-5729 ext. 268.

For Triangle Laboratories, Inc.,

Report Preparation

Quality Control

Vijay S. Chhabra Report Preparation Chemist

Report Preparation Chemist

The total number of pages in the data package is: 174.

THANGLELANS

DOCUMENT CONTROL

Triangle Laboratories, Inc.

801 Capitola Drive Durham, NC 27713-4411 919-544-5729

P.O. Box 13485 Research Triangle Park, NC 27709-3485 Fax # 919-544-5491 Custody Transfer Record/Lab Work Request WESTON Analytics Use Only



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Custody Transfer Record/Lab Work Request

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381-596a 3) Present on Sample COC Record Present 2) Unbroken on Outer Package Y or N Sample Y or N Package Y or N Jpon Sample Rec'l COC Tape was:

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-------TRIANGLE LABORATORIES, INC.--CHAIN OF CUSTODY--REVISED 02/17/95-----

Archive Remarks:

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Sample Tag Numbers: Listed SMO Forms : N/A			} Da	te Received	02/06/9	6 By	fm	-Page
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TLI Number Matrix mR/H:CPM Client ID Location	To LAB Date/Init	To STORAGE Date/Init	To LAB	To STORAGE; To Date/Init Date	o LAB ate/Init	To STORAGE: Date/Init	To LAB Date/Init	To STORAGE Date/Init
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113-217-3B XAD COE-HG-AFTOUT-M23-BT- CO1	+	1	i 	; - 	·	; ; ;		, † !
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COE-HG-AFTOUT-M23-BT-	+			-+		 		+
113-217-3E TOLUENE COE-HG-AFTOUT-M23-BT-	+		, 		; ; ;		 	i † †
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TRIANGLE LABORATORIES, INC. SAMPLE TRACKING AND PROJECT MANAGEMENT FORM

TLI Proj#: 36062- Samples: 5 Prod Code: D23451 Matrix.: M23 DetectLim: .05 ng Type: A	TurnAround.: 21 Day(s) Hold Time: 0 Day(s) Date Recvd.: 02/06/96 Date Due: 02/27/96 DWL Due Dt.: 02/16/96
Analyte List.: Tetra-Octa PCDDs/PCDFs	
Method: Method 23: T-O, Toluene Colient Proj: COE Hot Gas Program Client: Roy F. Weston, Inc. (RFWC P.O. No: Jeff O'Neill Proj. Mgr: Selena Armistead	
Prep Project: 02518	QA REQUIREMENTS
REPORTING REQUI	IREMENTS
Reporting Format: Report Option II	
See MILES for Instructions/Communication	us.
Completed by:	DATE: (PMGT0395)
Reviewed by:	DATE.

@ fre-spiked xAD clean

Triangle Laboratories, Inc.
TLI PROJECT# 02518
DATE 1/19/96 TLI BLANK
SPIKE Ong USF-C & USF-S
SPIKER
PREPARER G.L.
WESTON

1) XAD-clean 11Fi Her-cream 19/Asswood-clean

RFW01-Roy F. Weston, Inc.
COE-HG-AFTOUT-M23-R1-XAD
Project:36049
113-204-18

RFW01-Roy F. Weston. Inc.
COE-HG-AFTOUT-M23-R1-FILT
Project:36049

Laboratories, inc.

SPIRER CME

PREPARER G.L. WESTON

ESTON

Client COF - HOT GAS

ALPINE, AL

Plant AFTERBURINER OUTL

Source Dave

PCDF

Sample Method METHOD Z

Sample Type

(2) MO-clean, 1Filter-chean 19/ASSWOOD-clean

RFW01-Roy F. Weston, Inc. COE-HG-AFTOUT-M23-R2-Project:36062 113-217-18

RFW01-Roy F. Weston, Inc. COE-HG-AFTOUT-M23-R2-Project:36062 113-217-1A

Triangle Lessistories, Inc.
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Triangle Lessistories, Inc.

(3) XHO-clean IF. Hel-creary 3/ASSWedj-clean

RFW01-Roy F. Weston, Inc. COE-HG-AFTOUT-M23-R3-Project=36062 113-217-28

RFW01-Roy F. Weston, Inc. COE-HG-AFTOUT-M23-RS-Project:36062 113-217-2A Triangle Laboratories, Inc.
TLI PROJECT# 02518
DATE 1/19/96
SPIKE Ong USF-C & USF-S
SPIKER AND
PREPIECE G.L.
PESTON

(4) XXX -clean, 1 Filter-dean, glasswood-clean

RFW01-Roy F. Weston, Inc.
COE-HG-AFTOUT-M23-BTProject:36062
113-217-38

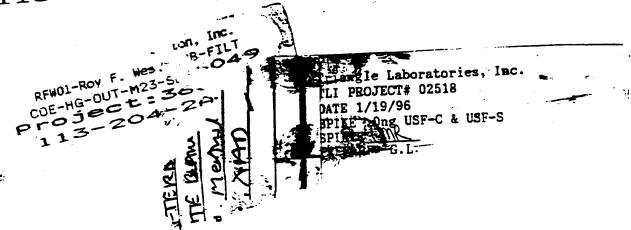
RFW01-Roy F. Weston, Inc.
COE-HG-AFTOUT-M23-BTProject:3606
113-217-36

Triangle Laboratories, Inc.
TLI PROJECT# 02518

DATE 1/19/96
SPIKE Ong USF-C & USF-S
SPIKER ORD
PREPARER G.L.
WESTON

3 IF Her clean YAO-clean glasswood-clean

F 113-204-28



PRDPERC v3.17 Page: 1

TRIANGLE LABORATORIES, INC.	Wet Lab MM5/PUF Observations	Project: 36062	
ite: 02/10/96	ime: 18:31		

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Date	02/06	02/06	05/08	05/0	07/0	07/0	
Air Q.No. Entered.By	02518 mercer	02518 mercer	02518 mercer	02518 mercer	02518 mercer	02518 mercer	
XAD Filter Glass Wool PUF Air Color Color Color Color Odor Q.No. Entered.By Date Time S		clean	clean	clean	clean	clean	
Filter (cream	cream	cream	clean	clean	
XAD Color	clean	clean	clean	clean	clean	clean	
₹ S	0	-	-	4	-	-	
<pre>'ample # crd TLI_Number Customer.Sample.Id</pre>	TLI M23 Blank	113-204-1A-E COE-HG-AFTOUT-M23-R1	113-217-1A-E COE-HG-AFTOUT-M23-R2	113-217-2A-E COE-HG-AFTOUT-M23-R3	113-217-3A-E COE-HG-AFTOUT-M23-BT	113-204-2A-D COE-HG-OUT-M23-SB	•
TLI_Number	TLI Blank	113-204-1A-E	·113-217-1A-E	113-217-2A-E	113-217-3A-E	113-204-2A-D	*** End of Report ***
Sample # crd	000	100	002	003	004	900	En

PAGE 1 OF 1 TRIANGLE LABORATORIES, INC. PCDD/PCDF/PBDD/PBDF Sample Preparation Tracking & Management Form Client: Roy F. Weston, Inc. (RFW01) Project: 36062 Method: Method 23: T-O, Toluene Combined Sample Information: Spiking Dates: 2/07/96 Extraction Date: 2107196 WL Spike: 40 μ l, conc: 0.100 ng/ μ l | SAMPLE | USF -I MISC Ex/EI) SIZE | A/CL Ex/Cl Extr. WEIGHT S#.crd SAMPLE CLIENT | Before After | g / ml | Initials Initials Initials 000 | 113-204-1A-E |001 | COE-HG-AFTOUT-M23-R1 | 002 | COE-HG-AFTOUT-M23-R2 | 113-217-2A-E | COE-HG-AFTOUT-M23-R3 | 113-217-3A-E | COE-HG-AFTOUT-M23-BT | Gross weight of sample container + sample before/after aliquot removal | Indicate below the TLI Identification Number of the Sample Fortification Solutions: Extract and HoLD COMMENTS: USF -ACS: Initial/Date 5/m 2107196 LOT # (Solvents): Taluen & 950743 INITIALS OF BOTH THE SPIKER AND OBSERVER MUST BE ENTERED. for extraction: (XXXXX = Gross Weight not provided for WATER Samples.) -----REV 03/07/95 (PSTMF 7)--

TRIANGLE LABORATORIES, INC. SAMPLE EXTRACTION and CLEANUP TRACKING FORM TLI Project: 36062 CHROMATOGRAPHIC CLEANUP= ===EXTRACTION== Spike Extr. Spike Acid Big Escitd Acid | Flor- | Carbon | Trans- | Add'l Ext S#.crd after Base Fish |Silica | Almina | isil | Column | fer |Cleanand before Gel 6 gm Extr. \ Extr. _ up TLI Number 2/10/96 000 TLI Blank 001 113-204-1A-E 002 113-217-1A-E 003 113-217-2A-E 004 113-217-3A-E 005 113-204-2A-DDETAILS..... Performed.By Observed.By ...PROCEDURE.... Spike Soxhelet Ext. Rotovap 40mL, (OmL) Dryness Combine Qivid 50:50 Solvent Exchange Add Tridecane Comments

TRIANGLE LABORATORIES, INC. Transfer Chain-of-Custody Form Project 36062

Transfer From: DWLH5 To: DMS5

Initials.. Date..... Time...

7:00 PM 2110196 Released by:

Accepted by:

MILES.ID..... TLI_No..... Cust.Id...... TLI Blank TLI M23 Blank -000 36062-

113-204-1A-E COE-HG-AFTOUT-M23-R1 -001 36062-113-217-1A-E COE-HG-AFTOUT-M23-R2 36062--002 113-217-2A-E COE-HG-AFTOUT-M23-R3 -003 36062-113-217-3A-E COE-HG-AFTOUT-M23-BT -004

-----XfrCOC (Rev 11/01/94)--+

Additional comments or instructions:

36062-

	nod: Method 23: T-O, Toluene Co Dired Detection Limit: .O5 ng			BORATORIES, INC.		٠	 PROJECT: ` 36062
 		1ST COLUMN	SAMPLE	INFORMATION 2ND	COLUMN		RS Conc 20 µl a 0.1 NG/µl
 S#.crd	TLI / SAMPLE ID / CLIENT / SAMPLE ID	GC/MS FILENAME COLUMN: DB-5	CONFIRM	CONFIRM FILENAME COLUMN: <u>DG - みみち</u> 	USF-RS VOLUME 35 S SOLN ID 337-CH	USF-RS INIT.	•
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003	113-217-2A-E COE-HG-AFTOUT-M23-R3	1 361059	 	1 1 <u>7</u> 460514			
004	113-217-3A-E COE-HG-AFTOUT-M23-BT	\$ 96106°	 	X960515			
005	T113-204-2A-D COE-HG-OUT-M23-SB		<u> </u> 		1 3/8/4	9 9	·
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			 .	 			
Comme	ints: * Extract and	Hold Sampl	e < 4 21	nke			Type: A
<u></u>							Spike File: SPX23704
							Amt of Extract: 50%

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TRIANGLE LABORATORIES INC RUN LOG

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35980 113-05-1 2 Composite by the bill of						- 11	COMMENTS	332.	OP INIT	0	FILE #
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- 34344 - Toba Concol S.O. Copal 18 - 18 - 18 - 18 - 18 - 18 - 18 - 18	7,3/44	20:30		34446			·	2.9	2		1 91.0 50E/
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TRIANGLE LABORATORIES OF RTP, INC.

SAMPLE DATA

TRIANGLE LABORATORIES, INC.
Sample Result Summary for Project 36062
Method 23X Full Screen Analyses (DB-5)

Page 1 02/21/96

Data File						=======================================
### 1975 Part		=======================================	G0 61 03 5	5961057	S961058	S961060
### 1975 Part)	Data File	Syctoss	COE-HG-AFTOITT-M	COE-HG-AFTOUT-M	COE-HG-AFTOUT-M
Units ng ng		Sample ID	TLI M23 Blank	COEPAG-AFIOUI-M	23-82	23-BT
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Analyses 2378-TCDD (0.03) 0.04 (0.02) (0.006) 12378-PCDD (0.03) 0.16 0.07 0.02 12378-PCDD (0.04) 0.13 0.06 (0.03) 123478-HXCDD (0.04) 0.13 0.05 (0.02) 123478-HXCDD (0.03) 0.15 0.05 (0.02) 123789-HXCDD (0.03) 1.2 0.34 0.07 123678-HXCDD (0.03) 1.2 0.34 0.07 123678-HXCDD (0.04) 3.1 1.1 (0.02) 12368-HXCDD (0.04) 3.1 1.1 (0.17) 12368-HXCDD (0.04) 3.1 1.1 (0.07) 12378-TCDF (0.02) 0.04 0.07 (0.009) 12378-PCDF (0.03) (0.02) 0.01 (0.01) 123478-PECDF (0.03) (0.02) 0.03 (0.01) 123478-HXCDF (0.03) (0.02) 0.03 (0.01) 123478-HXCDF (0.02) 0.02 0.02 (0.04 (0.02) 123478-HXCDF (0.02) 0.02 0.02 (0.01) 123478-HXCDF (0.02) 0.02 0.02 (0.01) 123478-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 123478-HXCDF (0.03) (0.01) (0.02) (0.02) 123478-HXCDF (0.03) (0.01) (0.02) (0.02) 123478-HXCDF (0.03) (0.01) (0.02) (0.02) 123478-HXCDF (0.03) (0.01) (0.02) (0.02) 100000000000000000000000000000000000		Units	ng	ng		
2378-TCDD		==============	:============	=======================================	=========	
2378-PeCDD					(0.02)	(0.005)
12378-PeCDD (0.04) 0.13 0.06 (0.02) 123478-HXCDD (0.04) 0.13 0.06 (0.02) 123478-HXCDD (0.03) 0.15 0.05 (0.02) 123478-HXCDD (0.03) 0.33 0.11 (0.02) 123478-HXCDD (0.03) 1.2 0.34 0.07 0CDD (0.04) 3.1 1.1 (0.17) 0CDD (0.04) 3.1 1.1 (0.07) 12378-TCDF (0.02) 0.04 0.07 (0.009) 12378-PECDF (0.03) (0.02) 0.01 (0.01) 12378-PECDF (0.03) (0.02) 0.03 (0.01) 123478-HXCDF (0.02) 0.02 0.03 (0.01) 123478-HXCDF (0.02) 0.02 0.04 (0.02) 123478-HXCDF (0.02) 0.02 0.04 (0.02) 123478-HXCDF (0.02) 0.01 0.02 (0.01) 123478-HXCDF (0.02) 0.01 0.02 (0.01) 123478-HXCDF (0.03) (0.01) (0.02) (0.02) 123478-HXCDF (0.03) (0.01) (0.02) (0.02) 123478-HXCDF (0.03) (0.01) (0.02) (0.02) 123478-HXCDF (0.03) (0.01) (0.02) (0.02) 123478-HYCDF (0.03) (0.01) (0.01) (0.02) 123478-HYCDF (0.03) (0.01) (0.02) (0.02) 123478-HYCDF (0.03) (0.01) (0.01) (0.03) 123478-HYCDF (0.03) (0.01) (0.01) (0.03) 123478-HYCDF (0.03) (0.01) (0.01) (0.02) 123478-HYCDF (0.03) (0.01) (0.01) (0.03) 123478-HYCDF (0.03) (0.01) (0.01) (0.03) 123478-HYCDF (0.03) (0.01) (0.01) (0.02) 123478-HYCDF (0.03) (0.01) (0.01) (0.02) 123478-HYCDF (0.03) (0.01) (0.01) (0.03) 1000 10000 10000 10000 100000 100000 1000000		2378-TCDD	(0.03)			
123478-HXCDD (0.04) 0.15 0.05 (0.05) 123789-HXCDD (0.03) 0.33 0.11 (0.02) 123789-HXCDD (0.03) 1.2 0.34 0.07 1234678-HBCDD (0.03) 1.2 0.34 (0.07) 12378-TCDF (0.02) 0.04 0.07 (0.09) 12378-PECDF (0.03) (0.02) 0.01 (0.01) 12378-PECDF (0.03) (0.02) 0.01 (0.01) 123478-HXCDF (0.02) 0.02 0.01 (0.01) 123478-HXCDF (0.02) 0.02 0.04 (0.02) 1234678-HXCDF (0.02) 0.02 0.04 (0.02) 1234678-HXCDF (0.02) 0.02 0.04 (0.02) 1234678-HXCDF (0.02) 0.01 0.02 (0.01) 1234678-HXCDF (0.02) 0.01 0.02 (0.01) 1234678-HBCDF (0.03) (0.01) (0.02) (0.02) 1234678-HBCDF (0.03) (0.01) (0.02) (0.02) 1234678-HBCDF (0.03) (0.01) (0.02) (0.02) 1234678-HBCDF (0.03) (0.01) (0.02) (0.02) 1234678-HBCDF (0.03) (0.01) (0.02) (0.02) 1234678-HBCDF (0.03) 0.08 0.05 (0.02) 1234678-HBCDF (0.03) 0.08 0.05 (0.02) 1234678-HBCDF (0.03) 0.08 0.05 (0.02) 1234678-HBCDF (0.03) 0.08 0.05 (0.02) 1234678-HBCDF (0.03) 0.08 0.05 (0.02) 1234678-HBCDF (0.03) 0.08 0.05 (0.02) 1234678-HBCDF (0.03) 0.08 0.05 (0.02) 1234678-HBCDF (0.03) 0.08 0.05 (0.02) 1234678-HBCDF (0.03) 0.08 0.05 (0.02) 1234678-HBCDF (0.03) 0.08 0.05 (0.02) 1234678-HBCDF (0.03) 0.08 0.05 (0.04) 1001 (0.03) 0.08 0.05 (0.04) 1002 (0.05) 0.06 0.06 (0.02) 1003 0.06 0.07 0.07 0.07 0.07 0.07 0.07 0.07		12378-PeCDD	(0.03)	0.16		
123678-HXCDD		123478-HxCDD	(0.04)	0.13		
123789-HXCDD (0.03) 0.33 0.11 (0.02) 1234678-HpCDD (0.03) 1.2 0.34 0.07 1234678-HpCDD (0.04) 3.1 1.1 (0.17) 12378-PECDF (0.02) 0.04 0.07 (0.009) 12378-PECDF (0.03) (0.02) 0.01 (0.01) 123478-PECDF (0.03) (0.02) 0.03 (0.01) 123478-PECDF (0.03) (0.02) 0.02 0.04 (0.02) 123478-HXCDF (0.02) 0.02 0.04 (0.02) 1234678-HXCDF (0.02) 0.002 0.03 (0.02) 1234678-HXCDF (0.02) 0.002 0.03 (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HYCDF (0.03) (0.01) (0.02) (0.02) 1234678-HPCDF (0.03) (0.01) (0.02) (0.02) 1234678-HPCDF (0.03) (0.01) (0.03) (0.01) 1234678-HPCDF (0.03) 0.08 (0.02) 1234678-HPCDF (0.03) 0.08 0.05 (0.04) 0CDF (0.03) 0.08 0.05 (0.04) 0CDF (0.03) 0.08 0.05 (0.04) 0CDF (0.03) 0.08 0.05 (0.04) 0CDF (0.03) 1.9 0.79 0.79 0.03 TOTAL HXCDD (0.03) 2.6 0.96 0.44 TOTAL HXCDD (0.03) 2.6 0.96 0.44 TOTAL HXCDD (0.03) 2.8 0.75 0.07 TOTAL TCDF (0.02) 0.04 0.14 (0.09) TOTAL HXCDF (0.02) 0.16 0.20 (0.01) TOTAL HXCDF (0.02) 0.16 0.20 (0.01) TOTAL HXCDF (0.03) 0.13 0.28 (0.01) TOTAL HXCDF (0.03) 0.13 0.28 (0.01) TOTAL HXCDF (0.03) 0.13 0.28 (0.01) TOTAL HXCDF (0.03) 0.13 0.26 (0.01) TOTAL HXCDF (0.03) 0.13 0.16 (0.02) Other Standards Percent Recovery Summary (* Rec) 13C12-HXCDF 478 84.1 92.0 95.0 89.6 13C12-HXCDF 478 99.2 107 106 111 13C12-HXCDF 789 81.6 87.4 86.4 96.4 Other Standards Percent Recovery Summary (* Rec) 13C12-HXCDF 789 81.6 87.4 86.4 96.0 13C12-HXCDF 789 81.6 87.4 86.4 96.0 13C12-HXCDF 234 85.9 93.0 89.3 100 Internal Standards Percent Recovery Summary (* Rec) 13C12-HXCDF 478 90.2 98.4 96.4 96.4 Other Standards Percent Recovery Summary (* Rec) 13C12-HXCDF 789 81.6 87.4 86.4 96.0 13C12-HXCDF 789 81.6 87.7 51.7 58.2 74.2 13C12-HXCDF 678 70.0 7.7 72.0 76.8 92.5 13C12-HXCDF 678 70.0 72.8 71.3 89.4 13C12-HBCDF 678 70.5 72.5 73.9 71.2 269.1 13C12-HBCDF 678 70.5 72.5 73.9 71.2 269.1 13C12-HBCDF 678 70.5 72.5 73.9 71.2 269.1			(0.03)			
1.234678-HPCDD						
Cold Cold		123/678-HDCDD	(0.03)	1.2		
Color				3.1		
1376-PeCDF					0.07	(0.009)
123478-PeCDF					0.01	(0.01)
13478-HXCDF		12378-PeCDF			0.03	
123478-HXCDF		234/8-PECDF			0.04	(0.02)
123678-HXCDF (0.02) 0.02 0.03 (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) (0.02) 1234678-HXCDF (0.03) (0.01) (0.02) 1234678-HDCDF (0.03) (0.01) 0.01 (0.03) 1234789-HDCDF (0.03) (0.01) 0.01 (0.03) 1234789-HDCDF (0.03) 0.08 0.05 (0.04) 0CDF (0.03) 0.84 0.36 0.02 TOTAL TCDD (0.03) 1.9 0.79 0.03 TOTAL PCDD (0.03) 2.6 0.96 0.14 TOTAL HXCDD (0.03) 2.8 0.75 0.07 TOTAL HXCDD (0.03) 2.8 0.75 0.07 TOTAL TCDF (0.02) 0.04 0.14 (0.009) TOTAL PCDF (0.02) 0.04 0.14 (0.009) TOTAL HXCDF (0.02) 0.16 0.20 (0.01) TOTAL HXCDF (0.02) 0.16 0.20 (0.01) TOTAL HYCDF (0.03) 0.13 0.16 (0.02) Other Standards Percent Recovery Summary (% Rec) 37C1-TCDD 87.1 95.9 95.0 89.6 13C12-PCDF 234 105 118 116 105 13C12-HXCDF 478 84.1 92.0 90.4 95.0 13C12-HXCDF 478 84.1 92.0 90.4 95.0 13C12-HCDF 789 92.2 98.4 98.4 90.4 Other Standards Percent Recovery Summary (% Rec) 13C12-HXCDF 789 92.2 98.4 98.4 90.4 Other Standards Percent Recovery Summary (% Rec) 13C12-HXCDF 789 81.6 87.4 86.4 96.0 13C12-HXCDF 789 81.6 87.4 86.4 96.0 13C12-HXCDF 789 81.6 87.4 86.4 96.0 13C12-HXCDF 789 81.6 87.4 86.4 96.0 13C12-HXCDF 789 81.6 87.4 86.4 96.0 13C12-HXCDF 789 81.6 87.4 86.4 98.3 100 Internal Standards Percent Recovery Summary (% Rec) 13C12-HXCDF 789 81.6 87.4 57.6 59.5 82.4 13C12-HXCDF 789 70.0 72.8 71.3 89.4 13C12-HXCDF 678 70.0 72.8 71.3 89.4 13C12-HXCDF 678 70.0 72.8 71.3 89.4 13C12-HXCDF 678 70.0 72.8 71.3 89.4 13C12-HXCDF 678 70.0 72.8 71.3 89.4 13C12-HXCDF 678 70.0 72.8 71.3 89.4 13C12-HXCDF 678 70.0 72.8 71.3 89.4 13C12-HXCDF 678 70.0 72.8 71.3 89.4 13C12-HXCDF 678 70.0 72.8 71.3 89.4 13C12-HXCDF 678 70.0 72.8 71.3 89.4 13C12-HXCDF 678 70.0 72.8 71.3 89.4 13C12-HXCDF 678 70.0 72.8 71.3 89.4 13C12-HXCDF 678 70.0 72.5 73.9 72.2 69.1 13C12-HXCDF 678 70.0 72.5 73.9 72.2 69.1 13C12-HXCDF 678 70.0 72.5 73.9 72.2 69.1 13C12-HXCDF 678 70.0 72.5 73.9 72.2 69.1		123478-HXCDF			0.02	
1234678-HXCDF			•			(0.02)
123789-HCDF (0.03) (0.01) 0.08 (0.02) 1234789-HpCDF (0.03) (0.01) 0.01 (0.03) 1234789-HpCDF (0.03) (0.01) 0.01 (0.03) 1234789-HpCDF (0.03) 0.08 0.05 (0.04) 1234789-HpCDF (0.03) 0.08 0.05 (0.04) 1234789-HpCDF (0.03) 0.08 0.05 (0.04) 1234789-HpCDF (0.03) 0.08 0.05 (0.04) 1234789-HpCDF (0.03) 0.08 0.05 (0.04) 1234789-HpCDD (0.03) 0.08 0.05 (0.04) 1234789-HpCDD (0.03) 1.9 0.07 1234789-HpCDD (0.03) 1.9 0.07 1234789-HpCDD (0.03) 1.9 0.07 1234789-HpCDD (0.03) 1.9 0.07 1234789-HpCDD (0.03) 1.9 0.79 1234789-HpCDF (0.03) 1.9 0.79 1234789-HpCDF (0.03) 1.9 0.79 1234789-HpCDF (0.03) 1.9 0.79 1234789-HpCDF (0.03) 1.9 0.79 1234789-HpCDF (0.03) 1.9 0.79 1234789-HpCDF (0.03) 1.9 0.79 1234789-HpCDF (0.03) 1.9 0.79 1234789-HpCDF (0.03) 1.9 0.79 123478-HpCDF (0.03) 1.9 0.79 1234789-HpCDF (0.03) 1.9 0.79 1234789-HpCDF (0.03) 1.9 0.79 123480-HpCDF (0.03) 1.9 0.79 123478-HpCDF (0.03) 1.9 0.79 123						
1234678-HpCDF (0.03) (0.01) 0.01 (0.03) CCDF (0.03) 0.08 0.05 (0.04) TOTAL TCDD (0.03) 0.08 0.05 TOTAL PECDD (0.03) 1.9 0.79 0.03 TOTAL HxCDD (0.03) 2.6 0.96 0.14 TOTAL TCDF (0.03) 2.8 0.75 0.07 TOTAL TCDF (0.02) 0.04 0.14 (0.009) TOTAL TCDF (0.02) 0.04 0.14 (0.009) TOTAL TCDF (0.03) 0.13 0.28 (0.01) TOTAL HxCDF (0.03) 0.13 0.28 (0.01) TOTAL HxCDF (0.03) 0.13 0.28 (0.01) TOTAL HxCDF (0.03) 0.13 0.26 (0.01) TOTAL HxCDF (0.03) 0.13 0.16 (0.02) Other Standards Percent Recovery Summary (% Rec) 37C1-TCDD 87.1 95.9 95.0 89.6 13C12-HxCDF 478 84.1 92.0 90.4 95.0 13C12-HxCDF 478 84.1 92.0 90.4 95.0 13C12-HxCDF 789 92.2 98.4 98.4 90.4 Other Standards Percent Recovery Summary (% Rec) 13C12-HxCDF 789 81.6 87.4 86.4 96.0 13C12-HxCDF 789 91.6 87.4 86.4 90.4 Other Standards Percent Recovery Summary (% Rec) 13C12-HxCDF 789 81.6 87.4 86.4 96.0 13C12-HxCDF 789 81.6 87.4 86.4 96.0 13C12-HxCDF 789 81.6 87.4 86.4 96.0 13C12-HxCDF 234 85.9 93.0 89.3 100 Internal Standards Percent Recovery Summary (% Rec) 13C12-2378-TCDF 45.7 51.7 53.6 74.1 13C12-2378-TCDD 53.4 57.6 59.5 82.4 13C12-PCDD 123 77.7 72.0 76.8 92.5 13C12-HxCDF 678 70.0 72.8 71.3 89.4 13C12-HxCDF 678 70.0 72.8 71.3 89.4 13C12-HxCDF 678 70.0 72.8 71.3 89.4 13C12-HxCDF 678 70.0 72.8 71.3 89.4 13C12-HxCDF 678 70.0 72.8 71.3 89.4 13C12-HxCDF 678 70.0 72.8 71.3 89.0 13C12-HxCDF 678 70.0 72.8 71.9 98.0 13C12-HxCDF 678 70.0 72.8 71.9 98.0 13C12-HxCDF 678 70.0 72.8 71.9 98.0 13C12-HxCDF 678 70.0 72.8 71.9 98.0 13C12-HxCDF 678 70.0 72.8 71.9 98.0 13C12-HxCDF 678 70.0 72.8 71.9 98.0 13C12-HxCDF 678 70.0 72.8 71.9 98.0 13C12-HxCDF 678 70.0 72.8 71.9 98.0 13C12-HxCDF 678 70.0 72.8 71.9 98.0 13C12-HxCDF 678 70.0 72.8 71.9 98.0			· · · · · · · · · · · · · · · · · · ·			•
1234789-HPCDF		1234678-HpCDF				· · · · · · · · · · · · · · · · · · ·
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13C12-PeCDF 123 55.3 55.7 58.2 74.2 13C12-PeCDD 123 77.7 72.0 76.8 92.5 13C12-HxCDF 678 70.0 72.8 71.3 89.4 13C12-HxCDD 678 82.1 82.7 79.8 98.0 13C12-HpCDF 678 72.5 73.9 72.2 69.1 13C12-HpCDD 678 102 95.9 94.7 84.4						
13C12-PeCDF 123 77.7 72.0 76.8 92.5 13C12-PeCDD 123 77.7 72.0 76.8 92.5 13C12-HxCDF 678 70.0 72.8 71.3 89.4 13C12-HxCDD 678 82.1 82.7 79.8 98.0 13C12-HpCDF 678 72.5 73.9 72.2 69.1 13C12-HpCDD 678 102 95.9 94.7 84.4						
13C12-HeCDF 678 70.0 72.8 71.3 89.4 13C12-HxCDF 678 82.1 82.7 79.8 98.0 13C12-HpCDF 678 72.5 73.9 72.2 69.1 13C12-HpCDD 678 102 95.9 94.7 84.4						
13C12-HXCDF 678						
13C12-HxCDD 678 82.1 82.7 79.8 98.0 13C12-HpCDF 678 72.5 73.9 72.2 69.1 13C12-HpCDD 678 102 95.9 94.7 84.4						
13C12-HpCDF 678 72.5 73.9 72.2 69.1 13C12-HpCDD 678 102 95.9 94.7 84.4		13C12-HxCDD 678				
13C12-HpCDD 678 102 95.9 94.7 84.4			72.5		_ :	
					:	
				94.0	93.9	62.6

{Estimated Maximum Possible Concentration}, (Detection Limit).

TRIANGLE LABORATORIES, INC. Sample Result Summary for Project 36062 Method 23X (DB-225)

Page 1 02/21/96

Data File

X960512

X960513

Sample ID

COE-HG-AFTOUT-M COE-HG-AFTOUT-M

23-R1

23-R2

ng

Analytes

2378-TCDF

(0.007)

{0.01}

Internal Standards Percent Recovery Summary (% Rec)

13C12-2378-TCDF 44.5

56.5

{Estimated Maximum Possible Concentration}, (Detection Limit).

Printed: 19:11 02/21/96

Roy F. Weston, Inc.

TLI Project:

36062

Method 23 PCDD/PCDF Analysis (a)

Client Sample:

TLI M23 Blank

Analysis File: S961035

COE Hot Gas Program Client Project:

Sample Matrix: TLI ID:

XAD TLI Blank Date Received: 11 Date Extracted: 02/07/96

Date Analyzed: 02/17/96

Spike File: ICal:

ConCal:

SPX23704 SF51256 S961030

Sample Size:

1.000 n/a

Dilution Factor: n/a Blank File:

Analyst:

S961035

% Moisture: % Lipid:

n/a n/a

Dry Weight: GC Column: DB-5

BD

% Solids:

n/a

Analytes	Amt. (ng.)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD 1,2,3,7,8-PeCDD 1,2,3,4,7,8-HxCDD 1,2,3,6,7,8-HxCDD 1,2,3,7,8,9-HxCDD	ND ND ND ND ND	0.03 0.03 0.04 0.03 0.03				
1,2,3,4,6,7,8-HpCDD 1,2,3,4,6,7,8,9-OCDD	ND ND	0.03				
2,3,7,8-TCDF 1,2,3,7,8-PeCDF 2,3,4,7,8-PeCDF	ND ND ND ND	0.02 0.03 0.03 0.02				
1,2,3,4,7,8-HxCDF 1,2,3,6,7,8-HxCDF 2,3,4,6,7,8-HxCDF 1,2,3,7,8,9-HxCDF	ND ND ND	0.02 0.02 0.03				
1,2,3,4,6,7,8-HpCDF 1,2,3,4,7,8,9-HpCDF 1,2,3,4,6,7,8,9-OCDF	ND ND ND	0.02 0.03 0.03				_

Totals	Amt. (ng.) Ni	mber DL EMPC	Flags
Total TCDD Total PeCDD Total HxCDD Total HpCDD	ND ND ND ND	0.03 0.03 0.03 0.03	
Total TCDF Total PeCDF Total HxCDF Total HpCDF	ND ND ND ND	0.02 0.03 0.02 0.03	=

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X237_PSR v1.14, LARS 6.03.09

TLI Project: Client Sample: 36062

TLI M23 Blank

Method 23 PCDD/PCDF Analysis (a)

Analysis File: S961035

		% Recovery	QC Limits	Ratio	RI	Flags
Internal Standards 13C ₁₂ -2,3,7,8-TCDF 13C ₁₂ -2,3,7,8-TCDD 13C ₁₂ -1,2,3,7,8-PeCDF 13C ₁₂ -1,2,3,7,8-PeCDD 13C ₁₂ -1,2,3,6,7,8-HxCDF 13C ₁₂ -1,2,3,6,7,8-HxCDD 13C ₁₂ -1,2,3,4,6,7,8-HpCDF 13C ₁₂ -1,2,3,4,6,7,8-HpCDD 13C ₁₂ -1,2,3,4,6,7,8-PeCDD	1.8 2.1 2.2 3.1 2.8 3.3 2.9 4.1 8.5	45.7 53.4 55.3 77.7 70.0 82.1 72.5 102 107	40%-130% 40%-130% 40%-130% 40%-130% 40%-130% 25%-130% 25%-130% 25%-130%	0.78 0.79 1.41 1.55 0.49 1.23 0.44 1.01 0.85	21:20 22:06 25:26 26:32 29:05 29:47 31:44 32:34 35:05	Flags

¹³ C ₁₂ -1,2,3,4,6,7,8,9-OCDD			QC Limits	Ratio	at	Flags
Surrogate Standards (Type A) ³⁷ Cl ₄ -2,3,7,8-TCDD ¹³ Cl ₂ -2,3,4,7,8-PeCDF ¹³ Cl ₂ -1,2,3,4,7,8-HxCDF ¹³ Cl ₂ -1,2,3,4,7,8-HxCDD ¹³ Cl ₂ -1,2,3,4,7,8,9-HpCDF	3.5 4.2 3.4 4.0 3.7	87.1 105 84.1 99.2 92.2	70%-140% 70%-140% 70%-140% 70%-140% 70%-140%	1.38 0.48 1.20 0.46	22:07 26:10 28:59 29:42 32:55	

¹³ C ₁₂ -1,2,3,4,7,8,9-HpCDF	J.,		QC Limits	Ratio	RT	Flags
Alternate Standards (Type A) 13C ₁₂ -1,2,3,7,8,9-HxCDF 13C ₁₂ -2,3,4,6,7,8-HxCDF	3.3 3.4	% Recovery 81.6 85.9	40%-130% 40%-130%	0.49 0.49	30:17 29:34	Flags

¹³ C ₁₂ -2,3,4,6,7,8-HxCDF	Ratio	RT	Flags
Recovery Standards 13C ₁₂ -1,2,3,4-TCDD 13C ₁₂ -1,2,3,7,8,9-HxCDD	0.82 1.21	21:53 30:04	

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TLI Project:

36062

Method 23 PCDD/PCDF Analysis (a)

Client Sample:

COE-HG-AFTOUT-M23-R1

Analysis File: S961057

Client Project: Sample Matrix: TLI ID:	COE Hot Gas Pro M23 113-204-1A-E	gram Date Received: Date Extracted: Date Analyzed:	02/07/96	Spike File: ICal: ConCal:	SPX23704 SF51256 S961053
Sample Size:	1.000	Dilution Factor:	n/a	% Moisture:	n/a
Dry Weight:	n/a	Blank File:	S961035	% Lipid:	n/a
GC Column:	DB-5	Analyst:	VCA	% Solids:	n/a

Analytes	Amt (ng)	DŁ	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	0.04			0.76	22:08	
1,2,3,7,8-PeCDD	0.16			1.51	26:33	
1,2,3,4,7,8-HxCDD	0.13			1.34	29:43	
1,2,3,6,7,8-HxCDD	0.15			1.27	29:49	
1,2,3,7,8,9-HxCDD	0.33			1.28	30:04	
1,2,3,4,6,7,8-HpCDD	1.2			1.06	32:35	
1,2,3,4,6,7,8,9-OCDD	3.1			0.85	35:06	-
2,3,7,8-TCDF	0.04			0.81	21:23	
1,2,3,7,8-PeCDF	ND	0.02				
2,3,4,7,8-PeCDF	ND	0.02				
1,2,3,4,7,8-HxCDF	0.02			1.34	29:00	
1,2,3,6,7,8-HxCDF	0.01			1.26	29:06	
2,3,4,6,7,8-HxCDF	0.02			1.28	29:35	
1,2,3,7,8,9-HxCDF	ND	0.01				
1,2,3,4,6,7,8-HpCDF	0.05			1.17	31:45	
1,2,3,4,7,8,9-HpCDF	EMPC		0.01			
1,2,3,4,6,7,8,9-OCDF	0.08			0.97	35:13	

Totals	Amt. (ng)	Number	DL EMPC	Flags
Total TCDD	0.84	13		
Total PeCDD	1.9	11	1.9	-
Total HxCDD	2.6	7		
Total HpCDD	2.8	2		-
Total TCDF	0.04	1		
Total PeCDF	0.13	4		******
Total HxCDF .	0.16	6		
Total HpCDF	0.13	2	0.14	

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X237_PSR v1.14, LARS 6.03.09

Printed: 18:46 02/21/96

TLI Project:

36062

Method 23 PCDD/PCDF Analysis (a)

Client Sample:

¹³C₁₂-1,2,3,4,7,8-HxCDD

¹³C₁₂-1,2,3,4,7,8,9-HpCDF

COE-HG-AFTOUT-M23-R1

4.3

3.9

Analysis File: S961057

29:43

32:55

1.21

0.42

70%-140%

70%-140%

Internal Standards	Amt. (ng)	% Recovery	QC Limits	Ratio	RT	Flags
¹³ C ₁₂ -2,3,7,8-TCDF	2.1	51.7	40%-130%	0.77	21:20	
· · · · · · · · · · · · · · · · · ·	2.3	57.6	40%-130%	0.80	22:06	
¹³ C ₁₂ -2,3,7,8-TCDD ¹³ C ₁₂ -1,2,3,7,8-PeCDF	2.2	55.7	40%-130%	1.45	25:27	
³ C ₁₂ -1,2,3,7,8-PeCDD	2.9	72.0	40%-130%	1.51	26:32	
¹³ C ₁₂ -1,2,3,6,7,8-F6CDD	- 2.9	72.8	40%-130%	0.51	2 9:05	
³ C ₁₂ -1,2,3,6,7,8-HxCDD	3.3	82.7	40%-130%	1.25	29:48	
	3.0	73.9	25%-130%	0.43	31:44	
¹³ C ₁₂ -1,2,3,4,6,7,8-HpCDF ¹³ C ₁₂ -1,2,3,4,6,7,8-HpCDD	3.8	9 5.9	25%-130%	1.05	32:34	
¹³ C ₁₂ -1,2,3,4,6,7,8,9-OCDD	7.5	94.0	25%-130%	0.85	35:06	
Surrogate Standards (Type A)	Amt (ng)	% Recovery	QC Limits	Ratio	нT	Flags
7Cl ₄ -2,3,7,8-TCDD	3.8	95.9	70%-140%		22:08	
	4.7	118	70%-140%	1.42	26:11	
³ C ₁₂ -2,3,4,7,8-PeCDF ³ C ₁₂ -1,2,3,4,7,8-HxCDF	3.7	92.0	70%-140%	0.50	29:00	
*C ₁₂ -1,2,3,4,7,0-FIXCDF	3.7	107	70%_140%	1 21	29-43	

Alternate Standards (Type A	Amt. (ng.)	% Recovery	QC Limits	Ratio	AT	Flags
¹³ C ₁₂ -1,2,3,7,8,9-HxCDF	3.5	87.4	40%-130%	0.51	30:18	
¹³ C ₁₂ -2,3,4,6,7,8-HxCDF	3.7	93.0	40%-130%	0.50	29:35	

107

98.4

Recovery Standards	I	l atio	RT I	Flags
¹³ C ₁₂ -1,2,3,4-TCDD		0.78	21:54	
¹³ C ₁₂ -1,2,3,7,8,9-HxCDD	·	1.23	30:05	

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TLI Project:

36062

Method 23 TCDD/TCDF Analysis (DB-225)

Client Sample:

COE-HG-AFTOUT-M23-R1

Analysis File:

X960512

Client Project: Sample Matrix: **COE Hot Gas Program**

M23

Date Received: Date Extracted: 113-204-1A-E

02/02/96 02/07/96 02/12/96

Spike File: ICal: ConCal:

SPC2NF04 XF21266

Sample Size:

TLI ID:

Date Analyzed: Dilution Factor: n/a

% Moisture: % Lipid:

X960506 n/a

Dry Weight: GC Column: 1.000 n/a DB-225

Blank File: Analyst:

S961035 MM

% Solids:

n/a n/a

AT

Analytes

Amt. (ng)

EMPC

Ratio

Flags

2,3,7,8-TCDF

ND

0.007

DŁ

Flags RT

Internal Standard

13C12-2,3,7,8-TCDF

Amt. (ng) 1.8

% Recovery

QC Limits

Ratio

21:32

44.5

40%-130%

0.79

Flags

Recovery Standard

¹³C₁₂-1,2,3,4-TCDD

0.81

Ratio

20:32

8T

02/21/96 Data Reviewer.

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C2NF_PSR v1.14, LARS 6.03.09

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Printed: 19:08 02/21/96

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Calculated Noise Area:

Data Review By:

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 02/21/96 Listing of X960512B.dbf

Matched GC Peaks / Ratio / Ret. Time

M_Z.... QC.Log Omit Why ..RT. OK Ratio Total.Area... Area.Peak.1.. Area.Peak.2.. Rel.RT Compound.Name.. ID..

			^	65-0.89			0.6	75-1.186	
TCDF				0.90	3.16			0.000	
304-306	DC	NL	0:00 RO	1.73	2.94			0.781	
	DC	SN	16:49 RO	0.32	1.47			0.783	
	DC	SN	16:52 RO	0.55	3.00			0.791	
	DC	SN	17:02 RO	0.48	2.58			0.809	
	DC	SN	17:25 RO		0.91			0.833	
	DC	SN	17:56 RO	0.21	2.00			0.836	
	DC	SN	18:00 RO	1.65	41.95	18.58	23.37	0.844	
•			18:10	0.80	22.22	20.00		0.849	
	DC	SN	18:17	0.74		18.05	29.02		
			18:25 RO	0.62	41.41	10.03	23.02	0.864	
	DC	SN	18:36	0.74	21.59			0.870	
	DC	SN	18:44 RO	0.06	0.55			0.876	
	DC	SN	18:52 RO	0.38	10.46	21.43	27 18	0.882	
			19:00	0.79	48.61	21.43	27.10	0.889	
	DC	SN	19:08 RO	1.49	10.30	32.98	49 71	0.896	
			19:17	0.66	82.69	22.86	23.29	0.904	
			19:28 RO	0.98	41.26	22.80	23.23	0.910	
	DC	SN	19:36	0.76	3.49	53.51	74.51	0.921	
			19:50	0.72	128.02	28.51	33.01		
			20:14	0.86	61.52	18.99	30.00		
			20:30 RO	0.63	43.53	10.33	50.00	0.959	
	DC	SN	20:39	0.71	33.81			0.971	
	DC	SN	20:54	0.81	8.48			0.977	
	DC	SN	21:02 RO	0.48	23.95			0.985	
	DC	SN	21:13 RO	0.42	3.96			0.996	
	DC	SIN	21:27 RO	0.61	20.16			1.001 2378-TCDF	AN
	DC.	SN	21:33 RO	0.51	26.10			1.010	
	DC	SN	21:45	0.75	39.28			1.022	
	DC	SN	22:01 RO	0.61	26.02		22.25	1.022	
			22:09	0.82	42.41	19.06	23.35		
	DC	SN	22:24 RO	1.18	2.58			1.040	
	DC	SN	22:31 RO	0.20	1.71			1.046	
	DC	SN	22:54	0.69	21.58			1.063	
	DC	SN	23:00 RO	0.39	2.92			1.068	
	DC	SN	23:04 RO	1.13	2.83			1.071	
	DC	SN	23:23 RO	0.99	1.56			1.086	
	DC	SN	23:30 RO	0.23	1.38			1.091	
	DC	SN	23:32 RO	0.19	3.04			1.093	
	DC	SN	23:36 RO	0.63	2.27	•		1.096	
	DC	SN	23:49 RO	1.12	0.87			1.106	
304-306		9	Peaks		531.40				

TLI Project:

36062

Method 23 PCDD/PCDF Analysis (a)

Client Sample:

COE-HG-AFTOUT-M23-R2

Analysis File:

S961058

Client Project: **COE Hot Gas Program** M23

Sample Matrix: TLI ID:

113-217-1A-E

Date Received: 02/06/96 Date Extracted: 02/07/96

Spike File: ICal:

SPX23704 SF51256

Date Analyzed: 02/19/96

ConCal:

S961053

Sample Size: Dry Weight:

1.000 n/a

Dilution Factor: n/a Blank File:

S961035

% Moisture: % Lipid:

n/a n/a

GC Column:

DB-5

Analyst:

VCA

% Solids:

n/a

Analytes	Amt (ng)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	EMPC		0.02		-	
1,2,3,7,8-PeCDD	0.07			· 1.69	26:32	
1,2,3,4,7,8-HxCDD	0.06			1.06	29:42	
1,2,3,6,7,8-HxCDD	0.05			1.26	29:47	
1,2,3,7,8,9-HxCDD	0.11			1.29	30:04	
1,2,3,4,6,7,8-HpCDD	0.34			0.99	32:34	
1,2,3,4,6,7,8,9-OCDD	1.1			0.87	35:05	
2,3,7,8-TCDF	0.07			0.87	21:21	
1,2,3,7,8-PeCDF	0.01			1. 6 6	25:26	
2,3,4,7,8-PeCDF	0.03			1.53	26:11	
1,2,3,4,7,8-HxCDF	0.04			1.17	28:59	
1,2,3,6,7,8-HxCDF	0.02			1.13	29:05	
2,3,4,6,7,8-HxCDF	0.03			1.23	29:35	
1,2,3,7,8,9-HxCDF	ND	0.02				
1,2,3,4,6,7,8-HpCDF	0.08			1.14	31:44	
1,2,3,4,7,8,9-HpCDF	0.01			1.07	32:55	
1,2,3,4,6,7,8,9-OCDF	0.05			0.80	35:12	-

Totals	Amt (ng)	Number	DL EMPC	Flags
Total TCDD	0.36	9	0.40	
Total PeCDD	0.79	8	0.91	
Total HxCDD	0.96	7		
Total HpCDD	0.75	2		
Total TCDF	0.14	2		
Total PeCDF	0.28	9	0.29	
Total HxCDF	0.20	5	0.20	
Total HpCDF	0.16	4		<u> </u>

Page 1 of 2

TLI Project:

36062

Method 23 TCDD/TCDF Analysis (DB-225)

Client Sample:

COE-HG-AFTOUT-M23-R2

Analysis File:

Spike File:

X960513

Client Project: Sample Matrix: **COE Hot Gas Program**

M23

Date Received:

02/06/96

ICal:

SPC2NF04

TLI ID:

113-217-1A-E

Date Extracted: 02/07/96 Date Analyzed: 02/12/96

ConCal:

XF21266 X960506

Sample Size: Dry Weight:

1.000 n/a

Dilution Factor: n/a Blank File:

S961035

% Moisture: % Lipid:

n/a n/a

AT

RT

GC Column:

DB-225

Analyst:

BB

% Solids:

n/a

Analytes

Amt (ng)

EMPC DL

Ratio

Flags

Flags

Flags

2,3,7,8-TCDF

EMPC

0.01

Internal Standard 13C12-2,3,7,8-TCDF

Amt. (ng)

56.5

% Recovery

40%-130%

QC Limits

0.80

Ratio

21:32

Recovery Standard

2.3

Ratio

13C12-1,2,3,4-TCDD

0.79

20:31

RT.

02/21/96 Data Reviewer:

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C2NF_PSR v1.14, LARS 6.03.09

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TLI Project:

36062

Method 23 PCDD/PCDF Analysis (a)

Client Sample:

COE-HG-AFTOUT-M23-R2

Analysis File: S961058

Internal Standards	Amt. (ng)	% Recovery	QC Limits	Ratio	RT	Flags
130 00 70 700 7	0.1					•
¹³ C ₁₂ -2,3,7,8-TCDF	2.1	53.6	40%-130%	0.77	21:20	
¹³ C ₁₂ -2,3,7,8-TCDD	2.4	59.5	40%-130%	0.78	22:05	
¹³ C ₁₂ -1,2,3,7,8-PeCDF	2.3	58.2	40%-130%	1.49	25:26	
¹³ C ₁₂ -1,2,3,7,8-PeCDD	3.1	76.8	40%-130%	1.55	26:32	
¹³ C ₁₂ -1,2,3,6,7,8-HxCDF	2.9	71.3	40%-130%	0.51	29:05	
¹³ C ₁₂ -1,2,3,6,7,8-HxCDD	3.2	79.8	40%-130%	1.20	29:47	
¹³ C ₁₂ -1,2,3,4,6,7,8-HpCDF	2.9	72.2	25%-130%	0.43	31:44	
¹³ C ₁₂ -1,2,3,4,6,7,8-HpCDD	3.8	94.7	25%-130%	1.02	32:34	
¹³ C ₁₂ -1,2,3,4,6,7,8,9-OCDD	7.5	93.9	25%-130%	0.86	35:05	
Surrogate Standards (Type A)	Amt (ng)	% Recovery	QC Limits	Ratio	AT	Flags
7CL-2,3,7,8-TCDD	3.8	95.0	70%-140%		22:07	
³ C ₁₂ -2,3,4,7,8-PeCDF	4.6	116	70%-140%	1.53	26:10	
³ C ₁₂ -1,2,3,4,7,8-HxCDF	3.6	90.4	70%-140%	0.50	28:59	
³ C ₁₂ -1,2,3,4,7,8-HxCDD	4.2 .	106	70%-140%	1.23	29:42	
³ C ₁₂ -1,2,3,4,7,8,9-HpCDF	3.9	98.4	70%-140%	0.42	32:55	
Alternate Standards (Type A)	Amil (ng)	% Recovery	QC Limits	Ratio	RT	Flags
³ C ₁₂ -1,2,3,7,8,9-HxCDF	3.5	86.4	40%-130%	0.50	30:17	
C ₁₂ -2,3,4,6,7,8-HxCDF	3.6	89.3	40%-130%	0.51	29:34	
	0.0		40 10-130 10	0.51	29.54	
Recovery Standards				Ratio	HT	Flags
C ₁₂ -1,2,3,4-TCDD				0.79	21:53	
C ₁₂ -1,2,3,7,8,9-HxCDD				1.21		

Data Reviewer.		7	1	02/21/96
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Page 2 of 2

TLI Project:

36062

Method 23 PCDD/PCDF Analysis (a)

Client Sample:

COE-HG-AFTOUT-M23-BT

Analysis File: S961060

Client Project: Sample Matrix: TLI ID:	COE Hot Gas Pro M23 113-217-3A-E	gram Date Received: Date Extracted: Date Analyzed:	02/07/96	Spike File: ICal: ConCal:	SPX23704 SF51256 S961053
Sample Size:	1.000	Dilution Factor:	n/a	% Moisture:	n/a
Dry Weight:	n/a	Blank File:	S961035	% Lipid:	n/a
GC Column:	DB-5	Analyst:	VCA	% Solids:	n/a

Analytes	Amt (ng)	DL	EMPC	Ratio	RT	Flags
2,3,7,8-TCDD	EMPC		0.006			**************************************
1,2,3,7,8-PeCDD	0.02			1.73	26:35	
1,2,3,4,7,8-HxCDD	ND	0.03				
1,2,3,6,7,8-HxCDD	ND	0.02				
1,2,3,7,8,9-HxCDD	ND	0.02				
1,2,3,4,6,7,8-HpCDD	0.07			1.06	32:37	
1,2,3,4,6,7,8,9-OCDD	EMPC		0.17			_
2,3,7,8-TCDF	ND	0.009				
1,2,3,7,8-PeCDF	ND	0.01				
2,3,4,7,8-PeCDF	ND	0.01		,		
1,2,3,4,7,8-HxCDF	ND	0.02				
1,2,3,6,7,8-HxCDF	ND	0.01				
2,3,4,6,7,8-HxCDF	ND	0.02				
1,2,3,7,8,9-HxCDF	ND	0.02				
1,2,3,4,6,7,8-HpCDF	. ND	0.02				
1,2,3,4,7,8,9-HpCDF	ND	0.03				
1,2,3,4,6,7,8,9-OCDF	ND	0.04				

Totals	Amt. (ng.)	Number	DL EMPC	Flags
Total TCDD	0.02	1	0.02	
Total PeCDD	0.03	2	0.09	
Total HxCDD	0.14	3		
Total HpCDD	0.07	1	0.15	_
Total TCDF	ND		0.009	<u> </u>
Total PeCDF	ND	(0.01	· <u>—</u>
Total HxCDF	ND	(0.01	_
Total HpCDF	ND	(0.02	

Page 1 of 2

X237_PSR v1.14, LARS 6.03.09

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TLI Project:

36062

Method 23 PCDD/PCDF Analysis (a)

Client Sample:

COE-HG-AFTOUT-M23-BT

Analysis File: S961060

Internal Standards	Amt (ng)	% Recovery	QC Limits	Ratio	RT	Flags
¹³ C ₁₂ -2,3,7,8-TCDF	3.0	74.1	40%-130%	0.77	21:23	
¹³ C ₁₂ -2,3,7,8-TCDD	3.3	82.4	40%-130%	0.79	22:08	
¹³ C ₁₂ -1,2,3,7,8-PeCDF	3.0	74.2	40%-130%	1.47	25:30	
¹³ C ₁₂ -1,2,3,7,8-PeCDD	3.7	92.5	40%-130%	1.54	26:34	
¹³ C ₁₂ -1,2,3,6,7,8-HxCDF	3.6	89.4	40%-130%	0.51	29:07	
¹³ C ₁₂ -1,2,3,6,7,8-HxCDD	3.9	98.0	40%-130%	1.22	29:49	
¹³ C ₁₂ -1,2,3,4,6,7,8-HpCDF	2.8	69.1	25%-130%	0.43	31:47	_
¹³ C ₁₂ -1,2,3,4,6,7,8-HpCDD	3.4	84.4	25%-130%	1.01	32:37	
¹³ C ₁₂ -1,2,3,4,6,7,8,9-OCDD	5.0	62.6	25%-130%	0.86	35:08	
Surrogate Standards (Type A)	Amt (ng)	% Recovery	QC Limits	Ratio	AT	Flags
TCI 00 5 0 TCD	2.6	89.6	70%-140%		22:10	
³⁷ CL-2,3,7,8-TCDD	3.6 4.2	89.6 105	70%-140% 70%-140%	1.49	26:13	
¹³ C ₁₂ -2,3,4,7,8-PeCDF	3.8	95.0	70%-140% 70%-140%	0.52	29:02	
¹³ C ₁₂ -1,2,3,4,7,8-HxCDF	3.6 4.4	111	70%-140% 70%-140%	1.21	29:45	
¹³ C ₁₂ -1,2,3,4,7,8-HxCDD	3.6	90.4	70%-140% 70%-140%	0.42	29. 4 3 32:57	
¹³ C ₁₂ -1,2,3,4,7,8,9-HpCDF	3.0	90.4	70%-140%	0.42	32.37	
Alternate Standards (Type A)	Amt (ng)	% Recovery	QC Limits	Ratio	RT	Flags
¹³ C ₁₂ -1,2,3,7,8,9-HxCDF	3.8	96.0	40%-130%	0.51	30:20	
¹³ C ₁₂ -2,3,4,6,7,8-HxCDF	4.0	100	40%-130%	0.50	29:37	_
						,
Recovery Standards				Ratio	RT	Flags
¹³ C ₁₂ -1,2,3,4-TCDD				0.81	21:57	
¹³ C ₁₂ -1,2,3,7,8,9-HxCDD				1.20	30:06	

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Data Reviewer.		02/21/96

Page 2 of 2



CASE NARRATIVE

Analysis of Samples for the Presence of Polychlorinated Dibenzo-p-Dioxins and Dibenzofurans by High-Resolution Chromatography / High-Resolution Mass Spectrometry

Method 23 (6/93)

Date:

March 4, 1996

Client ID:

Roy F. Weston, Inc.

P.O. Number:

TLI Project Number:

36062r1

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Rev. 06/02/95

Overview

Two M23 samples were received from Roy F. Weston, Inc. on February 02, 1996 at 11 °C under TLI project number 36049. Three more M23 samples were received on February 06, 1996 at 4°C. All samples were received in good condition and were stored in a refrigerator at 4°C until the time of extraction. The archived portion of sample COE-HG-AFTOUT-M23-R3 was fractionated due to poor internal standard recoveries in the initial analysis of the sample. Only results for this sample are included in this data package.

The sample and associated QC sample were extracted and analyzed according to procedures described in the Triangle Laboratories' Data User's Manual (Rev. 12/92-HK-2-AH-2/93). Any particular difficulties encountered during the samples' handling by Triangle Laboratories will be discussed in the QC Remarks section below. Results reported relate only to the items tested.

Quality Control Samples

A laboratory method blank, identified as the TLI M23 Blank, was prepared along with the samples.

Quality Control Remarks

This release of this particular set of Roy F. Weston, Inc. analytical data by Triangle Laboratories was authorized by the Quality Control Chemist who has reviewed each sample data package individually following a series of inspections/reviews. When applicable, general deviations from acceptable QC requirements are identified below and comments are made on the effect of these deviations upon the validity and reliability of the results. Please consult Triangle Laboratories' Data User's Manual for further details. Specific QC issues associated with this particular project are:

Sample Preparation Laboratory: None

Mass Spectrometry: None

Data Review: None

Other Comments: Any analytes found in the TLI M23 Blank are detected at a level equal to or less than the Target Detection Limit. This level of contamination is acceptable as per TLI guidelines. OCDD is not subject to blank contamination criteria as per TLI guidelines.

Sample Calculations:

Analyte Concentration

The amount of any analyte is calculated using the following expression.

$$Amt_{(\sigma)} = \frac{A_{\sigma} * Q_{\beta}}{A_{\beta} * RRF_{(\sigma)} * W}$$

Where:

Amt $_{(\sigma)}$ is the amount of a given analyte,

 A_{σ} is the integrated current for the characteristic ions of the analyte,

 A_{β} is the integrated current of the characteristic ions of the corresponding internal standard,

 Q_{β} represents the amount of internal standard added to the sample before extraction,

 $\mathsf{RRF}_{(\sigma)}$ is the mean analyte relative response factor from the initial calibration (ICal) and,

W is the sample weight or volume (W = 1 for M23)

The amount is expressed in nanograms (ng) or picograms (pg).

Detection Limits

The detection limit reported for a target analyte that is not detected or presents an analyte response that is less than 2.5 times the background level is calculated by using the following expression. The area of the analyte is replaced by the noise level measured in a region of the chromatogram clear of genuine GC signals multiplied by an empirically determined factor. The detection limits represent the maximum possible concentration of a target analyte that could be present without being detected.

$$DL_{(\sigma)} = \frac{2 * 2.5 * (F * H) * Q_{\beta}}{A_{\beta} * RRF_{(\sigma)} * W}$$

Where:

 $DL_{\left(\sigma\right)}$ is the estimated detection limit for a target analyte,

2.5 is the minimum response required for a GC signal,

F is an empirical number that approximates the area to height ratio for a GC signal. This number is 5 for the DB-5 GC column and 3.5 for the DB-225 GC column,

H is the height of the noise

 A_{β} is the integrated current of the characteristic ions of the corresponding internal standard.

 Q_{β} represents the amount of internal standard added to the sample before extraction,

 $RRF_{(\sigma)}$ is the mean analyte relative response factor from the initial calibration (ICal) and,

W is the sample weight or volume

The detection limit is expressed in nanograms (ng) or picograms (pg).

Other sample calculations may be found in the Triangle Laboratories Data User's Manual.

Data Flags

In order to assist with data interpretation, data qualifier flags are used on the final reports, as discussed in Triangle Laboratories' Method 23 Data User's Manual. Please note that all data qualifier flags are subjective and are applied as consistently as possible. Each flag has been reviewed by two independent Chemists and the impact of the data qualifier flag on the quality of the data discussed above. The most commonly used flags are:

A 'B' flag is used to indicate that an analyte has been detected in the laboratory method blank as well as in an associated field sample. The 'B' flag will be used only when the concentration of analyte found in the sample is less than 20 times that found in the associated blank. This flag denotes possible contribution of background laboratory contamination to the concentration or amount of that analyte detected in the field sample. Under Triangle Laboratories guidelines, a laboratory blank is acceptable if the tetrathrough hepta-CDD/CDF levels are all below the target detection limits (TDLS) or if the contamination levels are less than 5% of the levels detected in the associated field samples. If these conditions are satisfied or if the blank is unable to be reextracted, the interpretation of the contamination levels relative to the samples should be as follows: 1) analyte quantitations should be considered valid if the level of blank contamination is less than five percent of the level detected in the field sample, 2) analyte quantitations should be considered estimated if the analyte level in the sample is five to twenty times the level of the analyte in the blank, or 3) analytes whose level in a sample is the same as or less

than five times the level detected in the associated blank should be considered present likely due to laboratory contamination and not native to the sample.

- An 'E' flag is used to indicate that an PCDF peak has eluted at the sample time as the associated diphenyl ether (DPE) and that the DPE peak intensity is ten percent or more of the PCDF peak intensity. Total PCDF values are flagged 'E' if the total DPE contribution to the total PCDF value is greater than ten percent. All PCDF peaks that are significantly influenced by the presence of DPE peaks are quantitated with EMPC values, regardless of the isotopic abundance ratio. These EMPC values are most likely overestimated due to the DPE contribution to the peak area.
- An 'I' flag is used to indicate labeled standards have been interfered with on the GC column by coeluting, interferent peaks. The interference may have caused the standard's area to be overestimated. All quantitations relative to this standard, therefore, may be underestimated.
- A 'PR' flag is used to indicate that a GC peak is poorly resolved. This resolution problem may be seen as two closely eluting peaks without a reasonable valley between the peak tops, overly broad peaks, or peaks whose shapes vary greatly from a normal distribution. The concentrations or amounts reported for such peaks are most likely overestimated.
- A 'Q' flag is used to indicate the presence of QC ion instabilities caused by quantitative interferences. Affected analytes may be overestimated or underestimated as a result of this interference. A peak is flagged 'Q' only if it is affected by a QC ion deviation greater than 20% full scale as determined relative to the labeled standard against which it is quantitated. Total PCDF/PCDF quantitations will be flagged 'Q' if the interferences affect ten percent or more of the total PCDD/PCDF peak areas.
- An 'RO' flag is used to indicate that a labeled standard has an ion abundance ratio that is outside of the acceptable QC limits, most likely due to a coeluting interference. This may have caused the percent recovery of the standard to be overestimated. All quantitations versus this standard, therefore, may be underestimated.
- A 'U' flag is used to indicate that a specific (2,3,7,8-substituted) isomer cannot be resolved from a large, coeluting interferent GC peak. The specific isomer is reported as not detected as a valid concentration/amount cannot be determined. The calculated detection limit, therefore, should be considered an underestimated value.
- A 'V' flag is used to indicate that, although the percent recovery of a labeled standard may be below a specific QC limit, the signal-to-noise ratio of the peak is greater than tento-one. The standard is considered reliably quantifiable. All quantitations derived from the standard are considered valid as well.

By our interpretation, the analytical data in this project are valid based on the guidelines of EPA Method 23 (6/93) and Triangle Laboratories' Method 23 Data User's Manual. Any specific QC concerns or problems have been discussed in the QC Remarks section of this case narrative with emphasis on their effect on the data. Should Roy F. Weston, Inc. have any questions or comments regarding this data package, please feel free to contact our Project Scientist, Selena Armistead, at 919/544-5729 ext. 268.

For Triangle Laboratories, Inc.,

Report Preparation

Quality Control

Sheila A. Lee-Lewis Report Preparation Chemist

Report Preparation Chemist

brache beenly

The total number of pages in the data package is: ______.

TRANGLE LAIS

Triangle Laboratories, Inc.

801 Capitola Drive Durham, NC 27713-4411

919-544-5729

P.O. Box 13485

Research Triangle Park, NC 27709-3485 Fax # 919-544-5491

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TRIANGLE LABORATORIES, INC. SAMPLE TRACKING AND PROJECT MANAGEMENT FORM

TLI Proj#: 36062-r1 Prod Code: D23451 DetectLim: .05 ng	ADMINISTRATIVE INFO Samples: 2 Matrix.: M23 Type: A	TurnAround:: 21 Day(s) Hold Time.: 0 Day(s) Date Recvd:: 02/06/96 Date Due:: 02/27/96 DWL Due Dt:: 02/16/96
Analyte List.: Tetra-Oc	ta PCDDs/PCDFs	
Method: Method 2 Client Proj.: COE Hot Client: Roy F. W P.O. No: Contact: Jeff O'N Proj. Mgr: Selena A	Gas Program Jeston, Inc. (RFW01) Jeill	
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TRIANGLE LABORATORIES, INC.

Project: 36062 Entries made on or before 02/20/96

PRDLLST v1.04

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**** Log: C *** Desc: Cleanup archived portion **** By: Armistead on 02/20/96 at 17:43:15

*** Ext:[

Sample 113-217-2A-E has extremely poor internal standard recoveries which are not meeting 10:1 signal to noise criteria. Please take the archived portion of

the sample and subject it to cleanup procedures and analysis.

Email sent to: Ragsdale

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					 	USF-C:		Ot	her:		 -+
		Initi al/Da t	• <u>sf</u> m	210	296	LOT #	(Solvents):_	Taluen 2	950743		
	ALS OF BOTH THE SPIKER AND OBSE X = Gross Weight not provided for			D.		for ex	ctraction: _		REV 03/07/95	(PSTMF 7)	
										13	_

		SAMI	TRI PLE EXTE	RACTION	and CLI	ORIES, :	INC. RACKING	FORM			
				TLI P	coject:	36062	/A MOGD : 1	PHIC CLI	בי א איז זיט		
		XTRACTIO						PHIC CLI	Carbon	Trans-	انههما
Ext S#.crd	Spike		Spike	Acid	-	Escltd Silica			Column	fer	Clean-
and	before	/ /	after	Base	Fish			1511	COTUM	161	up
TLI Number	Extr. U		Extr.			Ge⊥ ,∽	6 gm	ł	, –	<u>_</u>	L up
	V187	4	CON			7				2/10/96	
000		367/94	9/2/20			. (34101.2	
TLI Blank	50Pm	1 AMV	1/1/10/01					20 24			
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003											
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113-21/-3A-E			:	·							-
005			! :					\\			
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PROCEDUR		D	ETAILS.			ed.By			DATE	196	
	Spike			•	· 580			<u> </u>	* / 5	7	
Soxhelet					360	<u>~</u> .		<u> </u>	L / E	196	
1		40mL, 2	OmL) Dry	yness	4-7	· ·			L/F	140	
Co	mbine				<u>' ///</u>	-			- / -	/ . 6 7/	
∮	ivide 50);'>"			4 ix	<u>~</u> .			Z / Z	194	
Solvent Exc	hange		.1.	/ a == .		<u> </u>			_ /	1. A+ -	
Add Trid	ecane		¥	-44010 .	(Colored	00		2	18	170	
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Comments _				Tric	elacan	c All	12 3/1	5 66	ewc) c	c up	TT2
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					7150	CC COCK	<i></i>	Rev	01/25/	TE LEST	MF 4)=
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		SAMI	TRI PLE EXTE	ANGLE I	and CL	EANUP TI	RACKING	FORM			-
			· · · · · · · · · · · · · · · · · · ·	TLI Pro	oject:	36062 F. 	_L Matograf	HIC CL	EANUP===		
Ext S#.crd and TLI Number		(TRACTIO	Spike after Extr.	Acid Base	Big Fish	Escltd		Flor-	Carbon Column	Trans- fer	Add'l Clean- up
rl 000 TLI Blank								÷	7	4/22/96	
rl 003 113-217-2A-E											
rl 0031 113-217-2A-E							2/2/196			V	
							MH				
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Co D Solvent Exc	E Ext ction R Ext ecane tovap mbine ivide	Soxhle	t /	Jar		B.	Observe		DATE///////	/ / / / / / / / / / / / / / / / / / /	
Comments _									. 02/08/	106 176	DATE A

TRIANGLE LABORATORIES, INC.
Transfer Chain-of-Custody Form
Project 36062-r1

Transfer From: DWLH5 To: DMS5

Initials.. Date..... Time...

Released by: 101 00/12/96 13:00

MILES.ID..... TLI_No..... Cust.Id.....

36062-r1 -000 TLI Blank TLI M23 Blank

36062-r1 -003 113-217-2A-E COE-HG-AFTOUT-M23-R3 36062-r1 -0031 113-217-2A-E COE-HG-AFTOUT-M23-R3

_____XfrCOC (Rev 11/01/94)--+

Additional comments or instructions:

		 TR	RIANGLE LA	BORATORIES, INC.				
Meth	od: Method 23: T-O, Toluene Co ired Detection Limit: .O5 ng	mbined	HR GC/HR	RMS ANALYSIS			PRO	ECT: 36062r1
							RS (· · · · · · · · · · · · · · · · · · ·
		1ST COLUMN	SAMPLE	INFORMATION 2ND	COLUMN		20 μla	0.1 NG/μl
S#.crd	TLI / SAMPLE ID / CLIENT / SAMPLE ID	COLUMN: DBS	CONFIRM	CONFIRM FILENAME COLUMN: DGZZS	SOLN ID	USF-RS INIT. DATE	ANALYSIS COMMENTS 	
r1 000	TLI Blank TLI M23 Blank	₩01820Z	tre		13320N	12/24/2/21	 - -	
r1 003	113-217-2A-E COE-HG-AFTOUT-M23-R3	1001417 W018207	1/45	 				
r1 0031	113-217-2A-E COE-HG-AFTOUT-M23-R3]		-	+ *	+	 	
			 	 	1 POT 150BUTE 100	- - - - - - - - - - - - - - - - - - -		
		 			 			••
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			1	 				
Comme	nts:						Туре	:: A
							Spike File	e: SPX23704
							Amt of Ext	ract: 50% 07/95 (PSTMF 6)-

TRIANGLE LABORATORIES INC RUN LOG

HS#	٥	COLUMN TYPE		8	COLUMN #	PLOT NAME	PKO	AHOUNT INJ		ACQUISISTION		3/9 ⁻	
1670 J		DAS 62m	airia	55	5906453	Orting _	- Tot	r.onl		(ma)		とかいる	د. ا
									1		F		
DATE	1 1 ME	PROJECT#	SAMPLE#	9	CLIENT SAMPLE 10		COMMENTS		332.	OP INIT	P Q SYR	*	FILE #
2/19/4	1/0/		34 497	1	Richk	/finiscolifeath, f	(4 t+ P), (4 t+ P)) .	13.5	٧٩	2	D.M.	10.0310 M
	11.00	1	3490c	(ないっしい	L) Cowall (hy)		(took T-3/(mu+3)	- 3	4	>	十	701
	25	3615134	المذخ الد	7	काण्डां मानी	Clemy	dent (A) (Reden	Tray!	ÇS.	2	L J		ta. 1110W
	12:55	361514	337	0)	rei br	Bur	(Chaple UA)	100	$ \lambda$	42	1		, 01
	13,35		11+.43.149	_	14. Seza-	- 15-mary-12,	(" , (m) (Bix 45)	1.4.0) 1.7		\$	7		500
<u> </u>	14115		(14.65.34B)	۲	H. Scan, -A-m	-4ms - 12 c			ر≿ٍ	1	X		51
<u> </u>	18.5		J. 3.480	3	HASCOLA MAN	mm1 - 13			ه ا		À		ru,
_	. ×. ×.		wrs.	~	9-11:38"H	6- wm5. R,			عبي		>		0
	ن		ffy) .	>	\	, AL			٠,٣		3		to-
	16.56		Mr. J	4	•	. 43		-0	: W		7		7c. /
	18.18)		الهومان	=	שלאלר שא	Mr. Applicable champedly	⊕	(M.4.3)	25		}		40 ~
	15/6		1.6647	10	d 507	and	5.2M	-	او ۱	Y	7	7	011
	N54	361587	4650	2	na 577	d 20	Non	NOT USED	, eu	分	1	27	10-231009
	(53)	36 OGZC!	1	۵	82W121	s Bluk			73		}	+	70-
	3019		242-612-811	·w	(OF-416- A	FTarf- M23	K3 C		27.	->	7	7	260
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and due, 23;00

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TICLANGLE LABORATORIES INC RUN LOG

HS#	COLUMN TYPE	TYPE			COLUMN #	PI OT WALE	444		-					
				_#-		ירסו שעשב	PKD	AHOUNT INJ	_	ACQUISISTION	*	9/9		
16 A	215	30M	1 0.31/A		5923016	@ TLEPRO	17.(2.0 N		X(ONF	11.	Klunk	16. 1 T	7
DATE TIME	HE PROJECT#	ECT#	SAMPLE#	ş	CLIENT SAMPLE 11	01	COMMENTS	6				ווור		7 6
								33	332, UP	I IN I	P O SYR	*	F11E #	
11/41 []	17:03		3479 E	1	RICHK		(6004)	7)	1771	11 114	, A.		16.1.33	٦,
7	12:49 -		ንዛጉ ዛ	4	Istra (nd 5.0		9 27			7 77	FICHK (1760152	<u> </u>
2	- 12 : 12	1	3370 N	ı	RSIND		·	3 55		\$ 3	7	+	4560732	71
7	14:22 36	360228	ILE ALMER	٥	TLE 5.1	shit.		5,6 5,6	+ 24		D R5/10,		166974	
	175	60228	117-17-1	4	15121995 WL 500	265001		7			1,125/	-	1566731	
 -	77	-328-	360226-115-75500	-6-	9- 15121955 DOZ F 501	JOY-F-501-	12 2/	261/4	1 :		(322)		7860976	+
5)	15 01:51	36,328		0-	[512199F	NU 2 F501		1.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4	1,44	4	7	-	4260334	T
	13:56 36:228	1228		4	15121 995 WL Spol	We spol		77.7	1 h		11111		1960736	- 1
41/1 1301		36160		9	TY MZ3	15/2/L		E. 4 £211	- 00 [Y	7 7335		1960757	
4/21 17/1C		36160	11 4 · CS -44 · W		12-45-0100/52M=3496 1 27-45-57. 11	/	-F. 61k	6.7	4.	1 3	5 1	× >	X160 75Y	
1431 3hrzy		36160	14 -65 - 114 - 0F	2		1	12	2 4.		2 2 3		ν	1 cert 1760 +39	
61 344 16º	1926 36160		14 -65-	~			727.	2 50	4 1	N N			X160740	-i-
12	4% NE 36160		119-65- 314-0E	*		ر ار	-123	1,7	<u> </u>	3	182281		1 16074 1	
oc by	2056 36739		-941.11.11	1	2M-\$-1	3-5		7.7	4	1	152CK		19127	
C 1862	21/1 36239	33	J. 6.1. E	2	J	-3		\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \			182K1		1/160+13	
						,		()	7		7	-	160+44	

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COLU	COLUMN TYPE	PE	COLUMN TYPE		COLUMN #	PLOT NAME	PKD	AMOUNT INJ	ACQUISISTION	ION)	
778225		Ð		2	71082ts	J THIP	^	J. O.	Klong 77	5-1		<u></u>
TIME PROJECT#			SAMPLE#	9	CLIENT SAMPLE I	01	COMMENTS	332.	332. OP INIT	9	SYR #	FILE #
127X X235			11 6 - 1 44. 30 - 13	٣	1-8-m-8-1	4-52	-	F.S.	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	7	1322/	Y96034S
2311 36062rl 117.213.	1-2		13.213· 120. 豆	3	3 (OE-HE.	· AFTOUT -MES-R3	Az 3-R3	8.0	5	7	1822/	4-12181 X96274G
361554 119-13-14BD	44		_	1	4.\$CZN - F	A-mus- R.1	A-mus-R1 (5x 2) 4.4.4	٢.٠٠٠	X		12211	t bt 075% 1 12%
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TRIANGLE LABORATORIES OF RTP, INC.

SAMPLE DATA

क्षिर्भ वसायको छन्। स्थाप्त स्थापिक स्थाप

TRIANGLE LABORATORIES, INC. Sample Result Summary for Project 36062r1 Method 23X Full Screen Analyses (DB-5)

	Method 23X Fu	ll Screen Analyse	s (DB-5) ====================================
	======================================	W018203	
Data File	TLI M23 Blank	COE-HG-AFTOUT-	
Sample ID	TLI M23 BIAIR	M23-R3	
Units			=======================================
Analytes	(0.008)	0.02	
2378-TCDD	(0.01)	0.11	
12378-PeCDD	(0.01)	0.06	
123478-HxCDD 123678-HxCDD	(0.01)	0.07	
123789-HxCDD	(0.01)	0.18	•
1234678-HpCDD	(0.01)	0.73	
OCDD	0.06	2.0	
2378-TCDF	(0.006)	0.06	
12378-PeCDF	(0.01)	{0.02}	
23478-PeCDF	(0.008)	{0.02}	
123478-HxCDF	(0.008)	0.06	
123678-HxCDF	(0.006)	0.03	
234678-HxCDF	{0.008}	0.03 B	
123789-HxCDF	(0.009)	(0.01)	
1234678-HpCDF	(0.007)	0.10	
1234789-HpCDF	(0.01)	0.02	
OCDF	0.01	0.05 B	
TOTAL TCDD	(0.008)	0.26	
TOTAL PeCDD	(0,.01)	1.3	
TOTAL HXCDE	(0.01)	1.4	
TOTAL HPCDL	(0.01)	1.9	
TOTAL TCDF	(0.006)	0.35 0.32	
TOTAL PeCDF	(0.009)	0.32	
TOTAL HXCDF	{0.008}	0.18	
TOTAL HPCDF	(0.008)	0.10	
	De corrossi	Summary (& Rec)	
	Percent Recovery 96.2	101	
37C1-TCDD	96.2 91.4	92.2	
13C12-PeCDF 234	84.2	89.9	
13C12-HxCDF 478		90.5	
13C12-HxCDD 478	89.3	90.9	
13C12-HpCDF 789	69.3	2000	
art - Grandarde	Percent Recovery	Summary (% Rec)	
13C12-HxCDF 789	80.6	66.4	
13C12-HxCDF 789	81.4	6 5.5	
13C12-HXCDF 234	02.2		
T-townal Ctanda	rds Percent Recov	ery Summary (% Re	c) . ·
13C12-2378-TCDF	64.2	60.2	
13C12-2378-TCDD	68.2	60.9	
13C12-PeCDF 123	55.0	49.8	
13C12-PeCDP 123	65.3	57.7	
13C12-FeCDD 123	69.5	59.6	
13C12-HxCDD 678	86.3	73.2	
13C12-HACDE 678	57.3	51.3	
13C12-HpCDD 678	76.0	63.9	
	67.4	56.4	
	===============	=======================================	======================================
(makingted Mayi	mum Possible Conc	entration}, (Det	ection Limit).

{Estimated Maximum Possible Concentration}, (Detection Limit).

TRIANGLE LABORATORIES, INC. Sample Result Summary for Project 36062r1 Page 1 03/04/96

Method 23X (DB-225)

Data File

X960746

Sample ID

COE-HG-AFTOUT-

M23-R3

ng

Analytes

2378-TCDF

0.01

Internal Standards Percent Recovery Summary (% Rec)

13C12-2378-TCDF 43.7

TLI Project:

36062r1

Method 23 PCDD/PCDF Analysis (a)

Client Sample:

TLI M23 Blank

Analysis File: W018202

Client Project: Sample Matrix: TLI ID:	n/a XAD TLI Blank	Date Received: Date Extracted: Date Analyzed:	02/07/96	Spike File: ICal: ConCal:	SPX23704 WF52246 W018002
Sample Size:	1.000	Dilution Factor:	n/a	% Moisture:	n/a
Dry Weight:	n/a	Blank File:	W018202	% Lipid:	n/a
GC Column:	DB-5	Analyst:	DB	% Solids:	n/a

Analytes	Amt (ng)	DL	EMPC	Ratio	AT	Flags
2,3,7,8-TCDD	ND	0.008				-
1,2,3,7,8-PeCDD	ND	0.01				
1,2,3,4,7,8-HxCDD	ND	0.01				-
1,2,3,6,7,8-HxCDD	ND	0.01				
1,2,3,7,8,9-HxCDD	ND	0.01				
1,2,3,4,6,7,8-HpCDD	ND	0.01				
1,2,3,4,6,7,8,9-OCDD	0.06			0.83	34:21	
2,3,7,8-TCDF	ND	0.006				
1,2,3,7,8-PeCDF	ND	0.01				
2,3,4,7,8-PeCDF	ND	0.008				
1,2,3,4,7,8-HxCDF	ND	0.008				
1,2,3,6,7,8-HxCDF	ND	0.006				
2,3,4,6,7,8-HxCDF	EMPC		0.008			
1,2,3,7,8,9-HxCDF	ND	0.009				-
1,2,3,4,6,7,8-HpCDF	ND	0.007				
1,2,3,4,7,8,9-HpCDF	ND	0.01				
1,2,3,4,6,7,8,9-OCDF	0.01			0.88	34:27	*****

Totals	Amt. (ng) Nu	mber DL EMPC	Flags
Total TCDD	ND	0.008	
Total PeCDD	ND	0.01	
Total HxCDD	ND	0.01	
Total HpCDD	ND	0.01	
Total TCDF	ND	0.006	
Total PeCDF	ND	0.009	
Total HxCDF	EMPC	0.008	
Total HpCDF	ND	0.008	

Page 1 of 2

TLI Project:

36062r1

Method 23 PCDD/PCDF Analysis (a)

Client Sample:

TLI M23 Blank

Analysis File: W018202

Internal Standards	Amt. (ng)	% Recovery	QC Limits	Ratio	RT	Flags
	2.6	64.2	40%-130%	0.77	20:17	
¹³ C ₁₂ -2,3,7,8-TCDF	2.7	68.2	40%-130%	0.80	21:06	
¹³ C ₁₂ -2,3,7,8-TCDD	2.2	55.0	40%-130%	1.54	24:36	
¹³ C ₁₂ -1,2,3,7,8-PeCDF	2.6	65.3	40%-130%	1.49	25:43	
¹³ C ₁₂ -1,2,3,7,8-PeCDD	2.8	69.5	40%-130%	0.50	28:22	
¹³ C ₁₂ -1,2,3,6,7,8-HxCDF	3.5	86.3	40%-130%	1.26	29:05	
¹³ C ₁₂ -1,2,3,6,7,8-HxCDD	2.3	57.3	25%-130%	0.43	31:04	
¹³ C ₁₂ -1,2,3,4,6,7,8-HpCDF	3.0	76.0	25%-130%	1.08	31:55	
¹³ C ₁₂ -1,2,3,4,6,7,8-HpCDD ¹³ C ₁₂ -1,2,3,4,6,7,8,9-OCDD	5.4	67.4	25%-130%	0.87	34:21	
Surrogate Standards (Type A)	Amt. (ng)	% Recovery	QC Limits	Ratio	AT	Flags
TOL 2279 TODD	3.8	96.2	70%-140%	•	21:07	
³⁷ Cl ₄ -2,3,7,8-TCDD ¹³ C ₁₂ -2,3,4,7,8-PeCDF	3.7	91.4	70%-140%	1.48	25:21	
¹³ C ₁₂ -1,2,3,4,7,8-FECDI	3.4	84.2	70%-140%	0.51	28:16	
¹³ C ₁₂ -1,2,3,4,7,8-HxCDD	3.7	92.6	70%-140%	1.22	29:00	
¹³ C ₁₂ -1,2,3,4,7,8,9-HpCDF	3.6	89.3	70%-140%	0.41	32:16	
C[2-1,2,5, 1,7,6,5						
Alternate Standards (Type A)	Amt. (ng)	% Recovery	QC Limits	Ratio	RT	Flags
	3.2	80.6	40%-130%	0.50	29:35	
¹³ C ₁₂ -1,2,3,7,8,9-HxCDF	3.3	81.4	40%-130%	0.51	28:52	-
¹³ C ₁₂ -2,3,4,6,7,8-HxCDF	3.3	01.4	1070 13070			
Recovery Standards				Ratio	RT	Flags
-				0.82	20:54	
¹³ C ₁₂ -1,2,3,4-TCDD			÷	1.27	29:22	
¹³ C ₁₂ -1,2,3,7,8,9-HxCDD				1.41	47.44	

Data Reviewer: Shu-Lewis 03/04/96

Page 2 of 2

InitialDate...

Data Review By:

CA 3,4 AC Calculated Noise Area: 21.60

The Total Area for each peak with an ion abundance ratio outside ratio limits has been recalculated according to method requirements.

Page No. 1			List Matc	ing hed	of WO	18202B.dbf aks / Ratio / I	Ret. Time				
							Acces made 4	Awas Bask 2	Del RT	Compound.Name	ID
M_Z QC.Log	Omit	Why	RT.	OK	Ratio	Total.Area	Area.Peak.1	Area.Pear.z	Ker.M.	Compound.Name	
					.65-0.		•		951-1.04		
13C12-TCDF			0.00		1.19	43.39			0.000		
316-318	DC	WL	18:38		0.75	14.95			0.919		
	DC				0.23	8.78			0.923		
	_		19:05		0.72	1,758.32			0.941		
	DC	W.L.			0.42			177.33	0.976		
			20:17		0.77	27,434.70	11,907.90			13C12-2378-TCDF	ISO
			20:47		0.84	317.08	144.40	172.68	1.025		
	DC.	WH			0.35	44.58			1.094		
316-318	-		Peaks			27,923.05					
•••						Above: TCDF /	TCDD Follows				
									858-1.0	62	
TCDD				_	.65-0.			•	0.000		
320-322		NL	0:00		0.78				0.881		
	DC	SN	18:35		0.89			•	0.988		
	DC	SN	20:51		0.76				1.002	2378-TCDD	AN
	DC	SN			0.60				1.005		
	DC	SN	21:12						1.009		
	DC	SN	21:18 Peaks		0.35	0.00					
320-322		·	Feare	•							
37C1-TCDD								0	.905-1.0		
328	DC	NL	0:00)		13.59)		0.000		
00	DC	SN	19:53	3		12.19		_	0.942	37C1-TCDD	SUR1
			21:07	7		21,687.00			1.001		5014
			21:16	5		97.81	*		1.012		
			21:23			25.99		9	1.014		
*	DC		21:24			23.04		•	1.014		
328		3	Peak	5		21,810.80	,				
	mmp 0.65-0.89							0.905-1.095			
13C12-TCDD	DC	NL	0.0	-	2.23		2		0.000)	
332-334	DC				0.26				0.936		
	bc	311	20:5		0.8			0 18,474.2	0 0.991	13C12-1234-TCDI	RS1
			21:0		0.80		_	0 13,110.0	0 1.000	13C12-2378-TCDI	IS1
					2.1			9 38.1	4 1.008	3	
	DC	SN			2.4		5		1.013		
	~		21:2		0.6		9 141.0	0 208.4	9 1.01	7	
332-334		4	Peak			57,665.1	9				
						- Above: TCDD	/ PeCDF Follow	/S			

Roy F. Weston, Inc.

TLI Project:

36062r1

Method 23 PCDD/PCDF Analysis (a)

Client Sample:

COE-HG-AFTOUT-M23-R3

Analysis File: W018203

Client Project: Sample Matrix: TLI ID:	COE Hot Gas Prog M23 113-217-2A-E	ram Date Received: Date Extracted: Date Analyzed:	02/07/96	Spike File: ICal: ConCal:	SPX23704 WF52246 W018002
Sample Size:	1.000	Dilution Factor:	n/a	% Moisture:	n/a
Dry Weight:	n/a	Blank File:	W018202	% Lipid:	n/a
GC Column:	DB-5	Analyst:	DB	% Solids:	n/a

Analytes	Amt (ng)	DL	EMPC	Ratio	RT	Flags
2 2 2 9 TCDD	0.02			0.79	21:07	
2,3,7,8-TCDD	0.11			1.46	25:44	
1,2,3,7,8-PeCDD	0.06			1.11	29:01	
1,2,3,4,7,8-HxCDD	0.07			1.08	29:06	
1,2,3,6,7,8-HxCDD	0.18			1.27	29:23	PR
1,2,3,7,8,9-HxCDD				1.02	31:55	
1,2,3,4,6,7,8-HpCDD	0.73			0.89	34:21	
1,2,3,4,6,7,8,9-OCDD	2.0			0.07	5	
2,3,7,8-TCDF	0.06			0.66	20:20	
1,2,3,7,8-PeCDF	EMPC		0.02			
2,3,4,7,8-PeCDF	EMPC		0.02			
1,2,3,4,7,8-HxCDF	0.06			1.05	28:15	PR
1,2,3,6,7,8-HxCDF	0.03			1.12	28:22	
2,3,4,6,7,8-HxCDF	0.03			1.34	28:52	B,PR.
1,2,3,7,8,9-HxCDF	ND	0.01				
1,2,3,4,6,7,8-HpCDF	0.10			0.96	31:05	
1,2,3,4,7,8,9-HpCDF	0.02			0.93	32:17	
1,2,3,4,7,8,9-11pcD1 1,2,3,4,6,7,8,9-OCDF	0.05			0.83	34:29	B

Totals	Amt. (ng)	Number	DL EMPC	Flags
Total TCDD	0.26	7 11	0.42 1.3	
Total PeCDD Total HxCDD	1.3 1.4	7	1.3	
Total HpCDD	1.9	2		_
Total TCDF Total PeCDF	0.35 0.32	9 8	0.38	
Total HxCDF Total HpCDF	0.28 0.18	8 4	0.30	

Page 1 of 2

X237_PSR v1.14, LARS 6.03.09

Printed: 18:33 03/04/96

Roy F. Weston, Inc.

TLI Project:

36062r1

Method 23 PCDD/PCDF Analysis (a)

Client Sample:

COE-HG-AFTOUT-M23-R3

Analysis File: W018203

	Amt. (ng)	% Recovery	QC Limits	Ratio	RT	Flags
Internal Standards	Witte (0.5.)	•				
AC ACCOP	2.4	60.2	40%-130%	0.76	20:17	
¹³ C ₁₂ -2,3,7,8-TCDF	2.4	60.9	40%-130%	0.80	21:06	
¹³ C ₁₂ -2,3,7,8-TCDD	2.0	49.8	40%-130%	1.51	24:36	
¹³ C ₁₂ -1,2,3,7,8-PeCDF	2.3	57.7	40%-130%	1.56	25:43	
¹³ C ₁₂ -1,2,3,7,8-PeCDD	2.4	5 9.6	40%-130%	0.50	28:21	
¹³ C ₁₂ -1,2,3,6,7,8-HxCDF	2.9	73.2	40%-130%	1.20	29:05	
¹³ C ₁₂ -1,2,3,6,7,8-HxCDD	2.1	51.3	25%-130%	0.42	31:04	
¹³ C ₁₂ -1,2,3,4,6,7,8-HpCDF	2.6	63.9	25%-130%	1.06	31:55	
¹³ C ₁₂ -1,2,3,4,6,7,8-HpCDD	4.5	56.4	25%-130%	0.87	34:21	
¹³ C ₁₂ -1,2,3,4,6,7,8,9-OCDD	4					
				D. W.	ĦT	Flags
Surrogate Standards (Type A)	Amt (ng)	% Recovery	QC Limits	Ratio	n.i	riays
	4.0	101	70%-140%		21:07	
³⁷ CL-2,3,7,8-TCDD	3.7	92.2	70%-140%	1.51	25:21	
¹³ C ₁₂ -2,3,4,7,8-PeCDF	3.6	89.9	70%-140%	0.50	28:15	
¹³ C ₁₂ -1,2,3,4,7,8-HxCDF	3.6	90.5	70%-140%	1.23	29:00	
¹³ C ₁₂ -1,2,3,4,7,8-HxCDD	3.6	90.9	70%-140%	0.40	32:15	
¹³ C ₁₂ -1,2,3,4,7,8,9-HpCDF	٠.٠	20.2				
		A. S.	QC Limits	Ratio	RT	Flags
Alternate Standards (Type A)	Amt (ng)	% Recovery	QC Lamb	IRCO		
	2.7	66.4	40%-130%	0.47	29:35	
¹³ C ₁₂ -1,2,3,7,8,9-HxCDF	2.6	65.5	40%-130%	0.50	28:53	
¹³ C ₁₂ -2,3,4,6,7,8-HxCDF	2.0	03.5	10.10 120010			
Recovery Standards				Ratio	RT	Flags
				Λ 01	20:54	
¹³ C ₁₂ -1,2,3,4-TCDD				0.81	29:23	
¹³ C ₁₂ -1,2,3,7,8,9-HxCDD				1.21	29.23	

Data Reviewer.	She-Lews	03/04/96
Dam 100 110 11 011		

Page 2 of 2

X237_PSR v1.14, LARS 6.03.09

Triangle Laboratories, Inc.®

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Printed: 18:33 03/04/96

Roy F. Weston, Inc.

TLI Project:

36062r1

Method 23 TCDD/TCDF Analysis (DB-225)

Client Sample:

COE-HG-AFTOUT-M23-R3

Analysis File:

X960746

Client Project: Sample Matrix: **COE Hot Gas Program**

M23

Date Received: 02/06/96

Spike File: ICal:

SPC2NF04 XF21266

TLI ID:

113-217-2A-E

Date Extracted: 02/07/96 Date Analyzed: 02/29/96

ConCal:

X960733

Sample Size: Dry Weight:

1.000 n/a

Dilution Factor: n/a Blank File:

DL

Analyst:

W018202

% Moisture: % Lipid:

n/a n/a n/a

GC Column:

DB-225

DB

% Solids:

AT Flags

Analytes 2,3,7,8-TCDF

0.01

Amt (ng)

EMPC

Ratio 0.72

19:22

	-			-	-
90 . 2 /		7 1 1 1 1	ши	N. O.	14
					00000

Amt (ng)

QC Limits % Recovery

Ratio

RT Flags

Flags

¹³C₁₂-2,3,7,8-TCDF

1.7

40%-130% 43.7

0.80

19:20

	**********		***********	000000000
300000000000000000000000000000000000000				
			أع شحة	
1886 A 5 1	COVE	10.00		
999,350				000000000000000000000000000000000000000

13C12-1,2,3,4-TCDD

0.78

Ratio

18:24

HI

03/04/96 Data Reviewer.

Page 1 of 1

C2NF_PSR v1.14, LARS 6.03.09

APPENDIX J

RESULTS OF AMBIENT AIR MONITORING FOR EXPLOSIVES

All samples were analyzed for RDX, Tetryl and 2,4,6-TNT

				RDX, Tetryl and 2,4,6-1N1
Date	RFW#	Sample ID	Results	_
30-Jan-96	•			
	001	EAED29JAN96-1	Non-Detect	
	002	EPED29JAN96-1	Non-Detect	
	003	EPIM29JAN96-1	Non-Detect	
	004	EPIM29JAN96-1	Non-Detect	
	005	EPIS29JAN96-1	Non-Detect	
	006	EPIS29JAN96-2	Non-Detect	
	007	EAEU29JAN96-1	Non-Detect	
	800	EAEU29JAN96-1	Non-Detect	
3-Feb-96				-
3-Feb-90	001	EPIS31JAN96-2	Non-Detect	
	002	EPIS31JAN96-2	Non-Detect	
	003	EPIM31JAN96-2	Non-Detect	
	004	EPIM31JAN96-2	Non-Detect	
	005	EAED31JAN96-2	Non-Detect	
	006	EAED31JAN96-2	Non-Detect	
	007	EAEU31JAN96-2	Non-Detect	
	007	EAEU31JAN96-2	Non-Detect	
				_
10-Feb-96	004	TD06FED07F	Non-Detect	
	001	TB06FEB97F	Non-Detect	
	002	TB06FEB97B		
	003	BLO6FEB96F	Non-Detect	
	004	BL06FEB96B	Non-Detect	
	005	EPPM07FEB96F	Non-Detect	
	006	EPPM07FEB96B	Non-Detect	·
	007	EPIM06FEB96-3F	Non-Detect	
	800	EPIM06FEB96-3B	Non-Detect	
	009	EPIS06FEB96-3F	Non-Detect	
	010	EPIS06FEB96-3B	Non-Detect	
	011	EAEU06FEB96-3F	Non-Detect	
	012	EAEU06FEB96-3B	Non-Detect	
	013	EAED06FEB96-3F	Non-Detect	
	014	EAED06FEB96-3B	Non-Detect	
	015	EPPS07FEB96F	Non-Detect	
	016	EPPS07FEB96B	Non-Detect	
12-Feb-96	004	XAED12FEB96-1	Non-Detect	-
	005	XAEU12FEB96-1	Not-Detect	
15-Feb-96	006	XAEU15FEB96-2	Not-Detect	-
10-1 00-00	007	XAED15FEB96-2	Not-Detect	
20-Feb-96	002	XAEU20FEB96-3	Not-Detect	-
∠U-∟⊆n-30	002	XAED20FEB96-3	Not-Detect	
		77720201 2000 0	Not Dottor	-
sample i.D. o	Code:	_		
Ĺ	E	Α	<u>E</u>	D 29JAN96
	(E) Explosive	(P) Personal	(I) Initial	(S) Spiking - Matt Date
	(X) Particulate	(A) Area	(P) Post	(M) Maintenance - Vu of Sampling
	(A) Asbestos		(E) Eight Hour Sample	(U) Upwind
				(D) Downwind
				(C) Center

TB - Trip Blank BL - Field Blank



Roy F. Weston, Inc. 208 Welsh Pool Road Lionville, Pennsylvania 19341-1333 610-701-6100 • Fax 610-701-6140

LIONVILLE ANALYTICAL LABORATORY ANALYTICAL CASE NARRATIVE

Client: COE-HOT GAS RFW #: 9602L978

W.O. #: 02281-012-012-9999-00 Date Received: 08 February 1996

EXPLOSIVE

- 1. The set of samples consisted of six (6) air samples collected on 30 January 1996.
- 2. The samples were prepared on 13 February 1996 and analyzed for Explosives by OSHA Method 44, modified for HPLC analysis on 14,16 February 1996.
- 3. Laboratory control limits were not available for assessing spike recoveries.

FULJ. Michael Taylor

Vice President and Laboratory Manager

Lionville Analytical Laboratory

2-26

Date

WESTERN.

GLOSSARY OF EXPLOSIVE DATA

DATA QUALIFIERS

- U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- **DL** = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA = Not Applicable.
- **DF** = Dilution Factor.
- NR = Not Required.
- SP = Indicates spiked compound.

Roy F. Weston, Inc. - Lionville Laboratory

Explosives by HPLC / Method 8330

Report Date: 02/19/96 15:24

Cust ID: BAED29JAN96- EPED29JAN96- EPIM29JAN96- EPIM29JAN96- EPIS29JAN96- EPIS29JAN96total ug 900 AIR 0.20 Work Order: 02281-012-012-9999-00 Þ 1.00 total ug 005 AIR Þ total ug 1.00 004 AIR 0.20 0.20 U total ug 1.00 AIR Þ 1.00 total ug 007 0.20 AIR Client: COE-HOT GAS 0.20 U total ug 1.00 001 AIR D.F.: Matrix: Units: RFW#: RFW Batch Number: 9602L978 Information Sample RDX

Tetryl		_ 0,15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
2,4,6-Trinitrotoluene		_ 0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
		,					
	Cust ID:	Cust ID: EAEU29JAN96-	EAEU29JAN96- 1	BLANK-1	BLANK-1	TRIP BLANK-1	TRIP BLANK-1 TRIP BLANK-1
Sample	RFW#:	007	800	600	010	011	012
Information	Matrix:	AIR	AIR	AIR	AIR	AIR	AIR
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	total ug	total ug	total ug	total ug	total ug	total ug
$I_{J====================================$.=====================================	======================================			
RDX		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked. I= Interference. NA= Not Applicable. *= Outside of Advisory limits. %= Percent recovery. D= Diluted out.

0.050

0.050

0.15

0.15

0.050

0.050

0.15

Þ

0.15

0.15

2,4,6-Trinitrotoluene

RDX_Tetryl

0.15

on or we

Roy F. Weston, Inc. - Lionville Laboratory

Explosives by HPLC / Method 8330

Work Order: 02281-012-012-9999-00 Client: COE-HOT GAS RFW Batch Number: 9602L978

Page:

Report Date: 02/19/96 15:24

96LLC023-MB1 total ug BLK BSD AIR 13 33 96LLC023-MB1 1.00 total ug AIR BLK BS 26 14 RFW#: 96LLC023-MB1 1.00 total ug 0.050 0,15 0.20 AIR BLK Units: Cust ID: Matrix: 2,4,6-Trinitrotoluene Information Sample Tetryl RDX

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked. *= Outside of Advisory limits. I= Interference. NA= Not Applicable. %= Percent recovery. D= Diluted out. molan

Roy F. Weston, Inc. - Lionville Laboratory ANALYTICAL DATA PACKAGE FOR COE-HOT GAS

AI 96LLC023

AI 96LLC023

AI 96LLC023

01/30/96

01/30/96

01/30/96

DATE RECEIVED: 02/08/96

CLIENT ID

EAED29JAN96-1

EPED29JAN96-1

EPIM29JAN96-1

EPIM29JAN96-1

EPIS29JAN96-1

EPIS29JAN96-1

EAEU29JAN96-1

EAEU29JAN96-1

TRIP BLANK-1

TRIP BLANK-1

BLANK-1

BLANK-1

RFW #

001

002

003

004

005

006

007

800

009

010

011

012

MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
AI	96LLC023	01/30/96	02/13/96	02/16/96
AI	96LLC023	01/30/96	02/13/96	02/16/96
ΑI	96LLC023	01/30/96	02/13/96	02/16/96
ΑI	96LLC023	01/30/96	02/13/96	02/16/96
AI	96LLC023	01/30/96	02/13/96	02/16/96
AI	96LLC023	01/30/96	02/13/96	02/14/96
ΑI	96LLC023	01/30/96	02/13/96	02/14/96
AI	96LLC023	01/30/96	Ö2/13/96	02/14/96
AI	96LLC023	01/30/96	02/13/96	02/14/96

02/13/96

02/13/96

02/13/96

02/14/96

02/14/96

02/14/96

RFW LOT # :9602L978

LAB	00.

BLK	MB1	AI 96LLC023	N/A	02/13/96	02/14/96
BLK	MB1 BS	AI 96LLC023	N/A	02/13/96	02/14/96
BLK	MB1 BSD	AI 96LLC023	N/A	02/13/96	02/14/96

381 596a 3) Present on Sample Y or N 2) Unbroken on Oafen Package Y or N Sample Y of N COC Record Present 1) Present on Outer Package Y or (N Upon Sample Rect 4) Unbroken on 70 COC Tape was: **WESTON Analytics Use Only** Samples were:
1) Shipped X, or
1) Hand Delivered P. Airbill # 1408 1 em= 14.9 5) Received Within Holding Times 2) Ambient or Chilled 3) Receiped in Good Condition Y or N Properly Preserved
Y or N 4) Labels Indicate Cooler# **WESTON Analytics Use Only** CN INORG Metal z Discrepancies Between Samples Labels and COC Record (Y or 1 NOTES: 2 10 Be 5 Changed Del to STD parsone / Fere vog Hef# 4 Lynliad Chilingly nothing CERS L378 DATEREVISIONS DE LIBROL POR PLAG Herb PCB Pest/ ORGANIC Time AN8 L377 · Bloods & AOV Date Sodakel Liquid Solid Liquid Date Time Collected Collected Solid L375 Received by 3576 #/Type Container Refrigerator # Preservatives ANALYSES REQUESTED Volume Matrix L373 Relinquished Matrix
.. QC
Chosen
(<) MS MSD ۾ Work Order # 0228 - 612-012-9999-CL Po L372 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS Client ID/Description EBEURGTANGE-EHED291AN96-EPIM 2914NPb-EPISAGIAN96-ī RIPBIAR Date BIANK-WESTON Analytics Use Only <u>်</u> 유 Special Instructions: RFW 21-21-001/A-7/91 S. Soli S. Solid S. Solid S. Solid W. Water O. Oil DS. Drum Liquids
L. EP/TCLP
Leachate
WI - Wipe
X - Other
F - Fish Date Rec'd . Account # DL - Drum Cilent MATRIX



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LIONVILLE ANALYTICAL LABORATORY ANALYTICAL CASE NARRATIVE

Client: COE-HOT GAS RFW #: 9602L975

W.O. #: 02281-012-012-9999-00 Date Received: 08 February 1996

EXPLOSIVE

- 1. The set of samples consisted of six (6) air samples collected on 03 February 1996.
- 2. The samples were prepared on 13 February 1996 and analyzed for Explosives by OSHA Method 44, modified for HPLC analysis on 14,16 February 1996.
- 3. Laboratory control limits were not available for assessing spike recoveries.

GOLJ. Michael Taylor

Vice President and Laboratory Manager

Lionville Analytical Laboratory

Date

cs/jkd/misc/02-975.ex

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 6 pages.

GLOSSARY OF EXPLOSIVE DATA

DATA QUALIFIERS

- U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates spiked compound.

Roy F. Weston, Inc. - Lionville Laboratory

Explosives by HPLC / Method 8330

Report Date: 02/19/96 15:23

Page: EAED31JAN96-1.00 total ug 900 AIR Work Order: 02281-012-012-9999-00 Cust ID: EPIS31JAN96- EPIS31JAN96- EPIM31JAN96- EPIM31JAN96- EAED31JAN96total ug 1.00 002 AIR total ug 004 AIR 1.00 total ug AIR 1.00 total ug 002 AIR Client: COE-HOT GAS 1.00 total ug 001 AIR Units: D.F.: RFW#: Matrix: RFW Batch Number: 9602L975 Information Sample

[]====================================			======================================	======================================	=======£1=	13=====================================	======================================
		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
KUA		0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
2,4,6-Trinitrotoluene		U 050.0	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
	İ	,					
	Cust ID:	Cust ID: EAEU31JAN96-	EAEU31JAN96-	BLANK-2	BLANK-2	TRIP BLANK-2	TRIP BLANK-2
	. #W# C	2 007	2 008	600	010	011	012
Sample	Matrix	AIR	AIR	AIR	AIR	AIR	AIR
IIITOTINACTOII	D.F.	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	total ug	total ug	total ug	total ug	total ug	total ug
1]=========[]=======[]=================					:======£];		
		0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
RUA HO + vivi		0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
2,4,6-Trinitrotoluene		0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U

NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of Advisory limits. U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested.

(g. 2/2/4

Roy F. Weston, Inc. - Lionville Laboratory

Explosives by HPLC / Method 8330

Report Date: 02/19/96 15:23

Client: COK-HOT GAS

Page: Work Order: 02281-012-012-9999-00 96LLC023-MB1 1.00 total ug BLK BSD AIR 96LLC023-MB1 1.00 total ug BLK BS RFW#: 96LLC023-MB1 1.00 total ug AIR BLK Units: Cust ID: Matrix: D.F.: RFW Batch Number: 9602L975 Information

Sample

 $1_{1=----}$

87 14 26

0,415

0.050

2,4,6-Trinitrotoluene

Tetryl RDX

0.20

89 13 U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked.

%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of Advisory limits.



Roy F. Weston, Inc. - Lionville Laboratory 8330 ANALYTICAL DATA PACKAGE FOR COE-HOT GAS

DATE RECEIVED: 02/08/96

שים כו	LOT	#	. 96	O O T	975
RPW	14071	#	ם כ:	\cup Z \perp	כו כו

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
EPIS31JAN96-2	001	AI	96LLC023	02/03/96	02/13/96	02/14/96
EPIS31JAN96-2	002	AI	96LLC023	02/03/96	02/13/96	02/14/96
EPIM31JAN96-2	003	AI	96LLC023	02/03/96	02/13/96	02/14/96
EPIM31JAN96-2	004	AI	96LLC023	02/03/96	02/13/96	02/14/96
EAED31JAN96-2	005	AI	96LLC023	02/03/96	02/13/96	02/14/96
EAED31JAN96-2	006	AI	96LLC023	02/03/96	02/13/96	02/14/96
EAEU31JAN96-2	007	IA	96LLC023	02/03/96	02/13/96	02/14/96
EAEU31JAN96-2	008	AI	96LLC023	02/03/96′	Ö2/13/96	02/16/96
BLANK-2	009	AI	96LLC023	02/03/96	02/13/96	02/16/96
BLANK-2	010	AI	96LLC023	02/03/96	02/13/96	02/16/96
TRIP BLANK-2	011	AI	96LLC023	02/03/96	02/13/96	02/16/96
TRIP BLANK-2	012	AI	96LLC023	02/03/96	02/13/96	02/16/96
AB QC:						
BLK	MB1	ΙA	96LLC023	N/A	02/13/96	02/14/96
BLK	MB1 BS	AI	96LLC023	N/A	02/13/96	02/14/96
BLK	MB1 BSD	AI	96LLC023	N/A	02/13/96	02/14/96
DUK	MDI DOD	***	,	/	- ··· • - •	• •

62/20/96

381-596a Samples were CUC rape much 1) Shipped on Outan Hand Delivered Airbill # 116.0 AIRC 32) Unbroken on Outan N WEST TO THE 3) Present on Sample Y or (N Upon Sample Rec't Package Y or (N COC Record Present ا و 4) Unbroken on Sample Y of **WESTON Analytics Use Only** 5) Received Within Holding Times Properly Preserved 2) Ambient or Chilled 3) Received in Good Condition Y or N 4) Labels Indicate Cooler# **WESTON Analytics Use Only** СИ Metal Custody Transfer Record/Lab Work Request to STO all some sucan Discrepancies Between Samples Labels and COC Record Y N NOTES: Ref# DATEMENSIONS.

DATEMENSIONS.

DATEMENSIONS.

DATEMENSIONS. 3 1 10+ Block - Wals 394 1378 -> 3,00 Dasker Tithe callected 5 unless offerential ret Herb Pest/ Pest/ ORGANIC 50 sugar Time L377 **AN8** Uzulque a Changed De AOV Date Liquid Solid Liquid Solid Matrix Date Time L375 Received त्रधि #/Type Container ANALYSES REQUESTED Preservatives Refrigerator # Volume PIV PIV L373 Relinquished by Matrix
1. QC
Chosen
(<) 2 24 66 Est. Final Proj. Sampling Date Work Order # CA281-012-016-999-00 EXPloSI VES-RDX, TETHY JANT L372 EAEUSIJAN96-2 why Balon EAEDSIJAN96-2 FP15315AN916-2 DE 10 1975 FPIMSIJAN96-A FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS Time Client ID/Description R. P. Blank-2 Double French BABAK-2 55 Flot da 200 WESTON Analytics Use Only 746 Project Contact/Phone # _ AD Project Manager 多 9 ₽ Special Instructions: RFW 21-21-001/A-7/91 Relinquished Liquids L - EP/TCLP Leachate Date Rec'd W. Wipe X. Other Fish Account # MATRIX CODES:

14.9°



LIONVILLE ANALYTICAL LABORATORY ANALYTICAL CASE NARRATIVE

Client: COE-HOT GAS RFW #: 9602L084 W.O. #: 02281-012-012-9999-00 Date Received: 15 February 1996

EXPLOSIVE

- 1. The set of samples consisted of eight (8) air samples collected on 10 February 1996.
- 2. The samples were prepared on 20 February 1996 and analyzed for Explosives by OSHA Method 44, modified for HPLC analysis on 21 February 1996.
- 3. All required holding times for extraction and analysis were met.
- 4. All initial calibrations associated with this data set were within acceptance criteria.
- 5. All continuing calibration standards analyzed prior to the sample extracts were within acceptance criteria.
- 6. Laboratory control limits were not available for assessing spike recoveries.

J. Michael Taylor

Vice President and Laboratory Manager

Lionville Analytical Laboratory

2.33.96

Date

cs/jkd/misc/02-084.ex

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 6 pages.

WESTERN

GLOSSARY OF EXPLOSIVE DATA

DATA QUALIFIERS

- U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).
- J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.

ABBREVIATIONS

- BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.
- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA = Not Applicable.
- **DF** = Dilution Factor.
- NR = Not Required.
- SP = Indicates spiked compound.

Roy F. Weston, Inc. - Lionville Laboratory

Explosives by HPLC / Method 8330

Report Date: 02/22/96 12:02

Page Work Order: 02281-012-012-9999-00 Client: COE-HOT GAS RFW Batch Number: 9602L084

	Cust ID:	Cust ID: TB06FEB97F	TB06FEB97B	BL06FEB96F	BL06FEB96B	EPPM07FEB96F	EPPM07FEB96B
Sample Information	RFW#: Matrix: D.F.: Units:	001 AIR 1.00 total ug	002 AIR 1.00 total ug	003 AIR 1.00 total ug	004 AIR 1.00 total ug	005 AIR 1.00 total ug	006 AIR 1.00 total ug
RDX Tetryl 2,4,6-Trinitrotoluene		0.20 U 0.15 U 0.050 U	fl 0.20 U 0.15 U 0.050 U	0.20 U 0.15 U 0.050 U	==fl=======fl========fl=========fl======	0.20 U 0.15 U 0.050 U	0.20 U 0.15 U 0.050 U
Sample Information	Cust ID: RFW#: Matrix: D.F.: Units:	Cust ID: EPIMOGFEB96-3F RFW#: 007 Matrix: AIR D.F.: 1.00 Units: total ug	EPIMOGFEB96-3B 008 008 AIR 1.00 total ug	EPISOGFEB96- 3F 009 AIR 1.00 total ug	EPISOGFEB96- 3B 010 AIR 1.00 total ug	EAEUOGFEB96- 3F 011 AIR 1.00 total ug	EAEUOGFEB96-3B 012 AIR 1.00 total ug

NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of Advisory limits. U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested.

0.20 U

0.20 U

0.15

2,4,6-Trinitrotoluene_

Tetryl

0.20 U

0.20

0.20

0.20

0.15

0.050

0.15

0.15

0.15

Roy F. Weston, Inc. - Lionville Laboratory

Work Order: 02281-012-012-9999-00 Explosives by HPLC / Method 8330 Client: COE-HOT GAS

RFW Batch Number: 9602L084

Page:

Report Date: 02/22/96 12:02

96LLC029-MB1 1.00 total ug AIR BLK BS 96LLC029-MB1 total ug AIR BLK EPPS07FEB96F EPPS07FEB96B total ug 1.00 910 AIR total ug 1.00 015 AIR EAED06FEB96-1.00 total ug 014 AIR Cust ID: EAEDO6FEB96-1.00 total ug 013 AIR D.F.: Units: RFW#: Matrix: Information Sample

		=£1===		£1====		=£1====		£1==	======================================		T = E
RDX	0.20	Þ	0.20	n	0.20	Þ	0.20	D	0.20 U	7.1	∾
Tetryl	0,15	D	0.15	U	0.15	D	0.15	n	0.15 U	10	%
2,4,6-Trinitrotoluene	0.050	Ð	0.050) D	0.050	n	0.050	n	0.050 U	32	%

RFW#: 96LLC029-MB1 BLK BSD AIR Matrix: Cust ID: Information Sample

1.00 total ug Units: 65 10 71 2,4,6-Trinitrotoluene_ Tetryl RDX

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not requested. NS= Not spiked. I= Interference. NA= Not Applicable. *= Outside of Advisory limits. %= Percent recovery. D= Diluted out.

Roy F. Weston, Inc. - Lionville Laboratory 8330 ANALYTICAL DATA PACKAGE FOR COE-HOT GAS

DATE RECEIVED: 02/15/96

RFW LOT # :9602L084

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
,					22/22/26	02/21/06
TB06FEB97F	001	AI		02/10/96	02/20/96	02/21/96
TB06FEB97B	002	ΑI	96LLC029	02/10/96	02/20/96	02/21/96
BL06FEB96F	003	AI	96LLC029	02/10/96	02/20/96	02/21/96
BL06FEB96B	004	ΙA	96LLC029	02/10/96	02/20/96	02/21/96
EPPM07FEB96F	005	IA	96LLC029	02/10/96	02/20/96	02/21/96
EPPM07FEB96B	006	AI	96LLC029	02/10/96	02/20/96	02/21/96
EPIM06FEB96-3F	007	AI	96LLC029	02/10/96,	02/20/96	02/21/96
EPIMO6FEB96-3B	008	AI	96LLC029	02/10/96	02/20/96	02/21/96
EPIS06FEB96-3F	009	AI	96LLC029	02/10/96	02/20/96	02/21/96
EPIS06FEB96-3B	010	AI	96LLC029	02/10/96	02/20/96	02/21/96
EAEU06FEB96-3F	011	ΑI	96LLC029	02/10/96	02/20/96	02/21/96
EAEU06FEB96-3B	012	AI	96LLC029	02/10/96	02/20/96	02/21/96
EAED06FEB96-3F	013	AI	96LLC029	02/10/96	02/20/96	02/21/96
EAED06FEB96-3B	014	AI	96LLC029	02/10/96	02/20/96	02/21/96
EPPS07FEB96F	015	AI	96LLC029	02/10/96	02/20/96	02/21/96
EPPS07FEB96B	016	AI	96LLC029	02/10/96 ·	02/20/96	02/21/96
AB QC:						
BLK	MB1	AI	96LLC029	N/A	02/20/96	02/21/96
BLK	MB1 BS	AI	96LLC029	N/A	02/20/96	02/21/96
BLK	MB1 BSD	ΑI	96LLC029	N/A	02/20/96	02/21/96

381-596a Dontherend Strongs COC Record Present Upon Sample Rec't 2) Unbroken on Outer Package Y or N Sample Y or (N Package Y or (N 4) Unbroken on (1) Present on Outer 3) Present on Sam ō ≻ ō COC Tape was: **WESTON Analytics Use Only** Page 2) Ambient or Chilled Holding Times Properly Preserved
(Y pr N 3) Received in Good Condition (Y. or N Samples were:
1) Shipped or
Hand Delivered 5) Received Within 4) Labels Indicate **WESTON Analytics Use Only** СИ Metal SCHLAND Discrepancies Between DATEMENISION DE HOUSE TO CLUSIONE PARKEY Samples Labels and COC Record Y or Hef# to SOCH Jesse. reps NOTES: 1378 Herb PCB Pest ORGANIC Time L377 AN8 2 rokus changed De l Date AOV Date Time Collected Collected Liquid Solid Liquid 3 961200 L375 Received by 2/19/18 #/Type Container ANALYSES REQUESTED Preservatives Volume Matrix L373 Relinquished by Matrix
a QC
Chosen
(<) MS MSD Client - 4) 5 d EC - 10 C - 110 Fg a C Sat. Final Proj. Manual Wate Work Order # 02281 - 612 - 612 - 612 - 6999 - C <u> १५५८</u> Drainal housel Tax (L372 EPIMON FERGIB-3 Project Contact/Phone # (College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | College | C EPISOGEEB96-3 Paris EAEDOWNERSOWS E AEUOG FEB96-3 CONDITION FER STATE EPPMOT FEBGL 550 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS Client ID/Description Dol CLASTID TAT JAMAS (A)MONS **WESTON Analytics Use Only** オオ 89 8 유 Special Instructions: RFW 21-21-001/A-7/91 00 X 8 Liquids L - EP/TCLP Leachate Relinquished SE Soil
SE Sediment
SO Soil
SO Soil
SI Studge
W Water
O Oil
A Ar
DS Drum
Soilds
DI - Drum Date Rec'd Account # WI - Wipe X - Other F - Fish MATRIX CODES:



LIONVILLE ANALYTICAL LABORATORY ANALYTICAL CASE NARRATIVE

Client: COE-HOT GAS RFW #: 9603L267

W.O. #: 02281-012-012-9999-00 Date Received: 01 March 1996

EXPLOSIVE

The set of samples consisted of seven (7) air samples collected on 14,17,22,26 1. February 1996.

The samples and their associated QC samples were prepared on 07 March 1996 and 2. analyzed for Explosives by methodology based on EPA Method 8330 on 09 March 1996.

Laboratory control limits were not available for assessing spike recoveries. 3.

Vice President and Laboratory Manager

Lionville Analytical Laboratory

cs/jkd/misc/03-267.ex

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 5 pages.

WESTERN.

GLOSSARY OF EXPLOSIVE DATA

DATA QUALIFIERS

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- B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.
- E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- I = Interference.

ABBREVIATIONS

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- BSD = Indicates blank spike duplicate.
- MS = Indicates matrix spike.
- MSD = Indicates matrix spike duplicate.
- DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.
- NA = Not Applicable.
- **DF** = Dilution Factor.
- NR = Not Required.
- SP = Indicates spiked compound.

Roy F. Weston, Inc. - Lionville Laboratory

Explosives by HPLC / Method 8330

Report Date: 03/12/96 12:03

Work Order: 02281012012 Page: Client: COE-HOT GAS RFW Batch Number: 9603L267

	Cust ID: 1	Cust ID: TRIP BLANK	XAEU20FEB96-	XAED20FEB96-	XAED12FEB96-	XAEU12FEB96-	XAEU15FEB96-
			m	m	Н	П	7
Sample	RFW#:	100	002	003	004	002	900
Information	Matrix:	AIR	AIR	AIR	AIR	AIR	AIR
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	total ug	total ug	total ug	total ug	total ug	total ug
]========E	====[]=====[]==	=========£]zs===	======================================	==Ell=================================	
RDX		4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Tetryl		3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
2,4,6-Trinitrotoluene		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U

	Cust ID:	Cust ID: XAED15FEB96-	BLK	BLK BS		
Sample	RFW#:	007	96LLC044-MB1 96LLC044-MB1	96LLC044-MB		
Information	Matrix:	AIR	AIR	AIR		
	D.F.:	1.00	1.00	1.00		
	Units:	total ug	total ug	total ug		
		[]====================================			$[1]_{========}[1]_{======}[1]_{=======}[1]_{======}[1]_{======}[1]_{=======}[1]_{=======}[1]_{=======}[1]_{========}[1]_{========}[1]_{====================================$	
RDX		4.0 U	4.0 U	87	ale	
Tetryl		3.0 U	3.0 U	73	olo olo	
2,4,6-Trinitrotoluene		1.0 U	1.0 U	83	olo	

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked. %= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Roy F. Weston, Inc. - Lionville Laboratory 8330 ANALYTICAL DATA PACKAGE FOR COE-HOT GAS

CLIENT ID	RFW #	MTX PREP #	COLLECTION	EXTR/PREP	ANALYSIS
					-
TRIP BLANK	001	AI 96LLC044	02/26/96	03/07/96	03/09/96
XAEU20FEB96-3	002	AI 96LLC044	02/22/96	03/07/96	03/09/96
XAED20FEB96-3	003	AI 96LLC044	02/22/96	03/07/96	03/09/96
XAED12FEB96-1	004	AI 96LLC044	02/14/96	03/07/96	03/09/96
XAEU12FEB96-1	005	AI 96LLC044	02/14/96	03/07/96	03/09/96
XAEU15FEB96-2	006	AI 96LLC044	02/17/96	03/07/96	03/09/96
XAED15FEB96-2	007	AI 96LLC044	02/17/96	03/07/96	03/09/96
LAB QC:					
BLK	MB1	AI 96LLC044	N/A	03/07/96	03/09/96
BLK	MB1 BS	AI 96LLC044	N/A	03/07/96	03/09/96

Airbii # 234 (224) 345
Airbii # 234 (224) 345
2) Anribient 67 Chilled Sparkanov Outer 4) Unbroken on Sample Y of N 3) Present on Sarpete COC Record Present Upon Sample Rec't
Y or N COC Tape was:

1) Present on Outer ō **WESTON Analytics Use Only** Page 3) Received in Good Condition (Y) or N Properly Preserved Holding Times 5) Received Within Samples were: 4) Labels Indicate Cooler# **WESTON Analytics Use Only** СИ Metal **Custody Transfer Record/Lab Work Request** Discrepancies Between Samples Labels and COC Record? Y of NOTES: Hef# × Bruces son Oliveria × L378 Herb bCB best∖ ORGANIC Time L377 **BNA** AOV Date 0200 0000 0700 0000 Date Time Collected Collected Liquid Solid Liquid Solid 0012 106/40 cole secties 02/2c/20 L375 Received by <u> वितिस्य</u> 7 *७प्रा*ंत 74M/c0 33/14kd #/Type Container DATE/REVISIONS: ANALYSES REQUESTED Preservatives ٨i Volume Matrix HR L373 Relinquished Matrix QC Chosen (<) MS MSD ģ 16/27 Contex NA 8.3 2,0cm L372 XAFOIS FEBOLO-2 XAEDADFEB96-3 9:30 XAEU 20FEB96.3 08330=120X, Tetry 1, TIVT AEDIZ FEBGL-Time FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS XAEVISFEBGLG. XAEU13 FEB 96 Client ID/Description CUE HOTGAS Date Due _____ 31.62 Date TAT thing! Received by WESTON Analytics Use Only Project Contact/Phone # _ AD Project Manager — oc STD Del. रहर 703 <u>8</u> ζ2 8 <u>۔</u> کم Special instructions: 무 RFW 21-21-001/A-7/91 Client USAE S- Soil
SE-Sediment
SO-Soild
SL-Studge
W- Water
O-Oil
DS- Drum
Solids Liquids EP/TCLP Leachate Relinquished Date Rec'd Account # WI - Wipe X - Other F - Fish DL - Drum MATRIX CODES: Ļ

APPENDIX K

AMBIENT AIR MONITORING RESULTS FOR ASBESTOS



ROY F. WESTON, INC. 1635 PUMPHREY AVE. AUBURN, AL 36830 PHONE: (334) 826-6100 FAX: (334) 826-8232

PHASE CONTRAST MICROSCOPY RESULTS
Weston W.O. No. 02281-012-012-9999
Receipt Date 03/18/96 through 03/18/96

WESTON ID	CLIENT/CLIENT ID	DATE RECEIVED	VOLUME (liters)	FIBER COUNT	FIBERS /mm² *	DETECTION LIMIT	FIBERS / cc	CONFIDENCE LIMITS
DS013	USAEC/AAEU	03/18/96	763	9.0	10.00	0.003	0.005	0.003 - 0.013
DS014	USAEC/AAED	03/18/96	830	1.0	< 7.00	0.003	< 0.003	0.003 - 0.003
DS015	USAEC/APIS	03/18/96	102	3.5	< 7.00	0.026	< 0.026	0.026 - 0.046
DS016	USAEC/AFIELDBLANK	03/18/96	0	1.0	BLANK			-

TDTC = Too Dirty To Count SNA = Sample Not Analyzed Limit of Quantification = 5.5 Fibers / 100 Fields

* Corrected for Blank Count If Blank was Received

Results Approved for Transmittal by:

March 27, 1996

Upon issue, this report may be reproduced only in full and relates only to the items tested. Results were obtained following procedures in NIOSH 7400, Revision #3, 5/15/89. The WESTON Optical Microscopy Laboratory in Auburn, AL. is accredited by AIHA (Laboratory No. 9224).

Printed: 03/27/96 Page 1 of 1

INDUSTRIAL HYGIENE SAMPLING DATA

CLIENT: USAEC		WORK OR	DER: O	2281-1	>12 -0	12-99	95-00
PROJECT LOCATION: AAAP		SAMPLE	NUMBER:	AQE		ADIV# LATH	9-028
DATE: 11 MARGE		SAMPLE 1	it: Vu	- Hu	nh		
PUMP CALIBRATION DATA			Date	C.Time	Vol	E.Time	Flow
PUMP ID 512648		Initial	311	0730			1.591
CALIBRATION METHOD		CAL.	1	0700			
. / Bubble berone	Critical Oriface	Final CAL.	3/11	1630	_		1.590
Precision Rotameter				,	(6D	L/m;	,,
☐ Field Rotameter		MEAN FL	OW:	1.	> 10:1	/mi	N .
SAMPLING MEDIA	. ,						:
Adsorption Tube	Cassette			Other			
☐ Charcosi	□ 37 mm □ 0.8 μ						
☐ Tenax	□ 25 mm □ 0.4 μ □ MCE □ Open	um 1 Face		(Ty pel		,	
☐ Silica	☐ PVC ☐ Sid.						
MPLE TYPE							
Ambient	Personnel	□ TWAS	Sample		ther		
Work Area	Name:				:		i
☐ Adjacent RM☐ Background	ID #:			•			
-	Task:						
PUMP OPERATION START TIME: 0800	2ND START:	то	TAL TIME	: 49 763	SD MIN	mfer	
STOP TIME: 1600	2ND STOP:	vo	LUME.	763			
SAMPLE MANAGEMENT HANDLING	ANALYTICS	()	1	ANAL	YTES		
☐ Cold Storage	NIOSH Method 74	00 Des	3 hos				
☐ Vibration Sensitive	OSHA Method						
☐ Hand Carry Only	Other						
CHAIN OF CUSTODY		LABORATO	RY				
RECEIVED BY RELINOUISHED BY	DATE TIME	D AUB	IURN IH L	AB	X	OTHER	1
Vallugah Va Huyah	9/11 1800	ROY F	. WESTON	I INC.		Lionr	ille.
Shama Blan FED EX	03-13-76 1600	AUBU	UMPHREY RN. AL 36	830			
A.Muvon Brian benso	n 13-18-96 1000	ATTN:	BRIAN B	ENSON			

INDUSTRIAL HYGIENE SAMPLING DATA

CLIENT: USAEC		WORK OR	DER:	02281	-012.	012-99	199-00
PROJECT LOCATION: AAAP		SAMPLE N		. •	- 1	D HOLE	19514 49-028
DATE 11 MAR 96		HYGIENIS	T: Vu	- then	nh	2011	
PUMP CALIBRATION DATA			Date	C.Time	Vel	E.Time	Flow
PUMP ID		Initial	911	0730	-	_	1,7-31
CALIBRATION METHOD		CAL.	1	7.50			
- Oggotte Delante	tical Oriface	Final CAL.	3/11	1630	_	_	1.730
Precision Rotameter			L_/	<u> </u>	1 1 2 5	//	
☐ Field Rotameter		MEAN FL	OW:	/	1750.	Um	10
SAMPLING MEDIA							
Adsorption Tube	Cassette			Other			
☐ Charcosi	37 mm 2 0.8 µ	n					
☐ Tenax	25 mm 🖸 0.4 μ	m					
_ 3,,,	MCE Open			•Tygan		/	
	PVC Sid.	Jow!					
PLE TYPE							
Ambient	7 Personnel	O TWAS	iample		ther		
V=	lant:						
□ Adjacent RM □ Background □	D #:						
1	'ask:						
PUMP OFERATION START TIME: 0800	ND START:	TO	TAL TIME	. <i>4</i> 8	o Mi	L	
1. 03	ND STOP:	vo	LUME.	830	o Lin	lers.	
SAMPLE MANAGEMENT HANDLING	ANALYTICS		_	ANAL	YTES		
_	1 //	D Sh	las				
Cold Storage	NIOSH Method 740	N/A		· · · · · · · · · · · · · · · · · · ·			
U Vibration Sensitive	OSHA Method						
- naid Cary Only							
CHAIN OF CUSTODY		LABORATO	RY		A .		
RECEIVED BY RELINOUISHED BY	DATE TIME		URN İH L	AB	X	OTHER	
lateral Va tayah	411 1800	ROY F	WESTON	INC.		ionu	ille
hannon Kaul FED EX	03-13-96 1600	AUBU	umphrey Rn. al 36	E 30			
Murph Brian Bonson	13.18-96 1000	ATTN:	BRIAN B	ENSON			

;10-19-95 ; 15:57 ;

TREATMENT SYS-

205 378 3926;# 3/ 3

610-701-5028

APIS

INDUSTRIAL HYGIENE SAMPLING DATA

	1	7
A	7	3

CLIENT: USAEL		WORK O	WORK ORDER: 02281-012-012-9999-00					
			SAMPLE NUMBER: LAED / LABID# 10015 LOT#9-628 HYGIENIST: VIL Hayan					
PROJECT LOCATION: AAAP		SAMPLE	NUMBER.	1/	. /	LOTE	9-628	
DATE: 11 MAR 96		HYGIENI	HYGIENIST: VIL HayAM					
PUMP CALIBRATION DATA			Date	C.Time	Vei	E.Time	Flow	
PUMP ID		Initial CAL.	03/11	0430		_	1.690	
CALIBRATION METHOD	Critical Oriface	Final	1/				1.700	
C Supple paterie	Childi Onise	CAL.	103/il	0930			1-700	
Field Rotameter	Precision Rotameter Field Rotameter		MEAN FLOW: 1 TOO. Ymil					
SAMPLING MEDIA								
Adsorption Tube								
☐ Charcoal ☐ 37 mm ☐ 0.8 μm								
C Tenax								
Silica		Open Face Std. Cowl				-		
MOLE TYPE								
Personal G/ D/TWA Samala D Other :								
Li Ambient C Work Area	Personnel Greats Other Name: Levis Greats							
D Adjacent RM D Background	ID ::							
·	Task:							
PUMP OFERATION 1800	2ND START:	Tr	OTAL TIM	. 60	annu	Les		
AGATT	2ND STOP		TOTAL TIME: 60 minutes					
STOP TIME.	2ND STOP:		OCOME.					
SAMPLE MANAGEMENT HANDLING	ANALYTIC	S	1	ANAL	YTES			
Cold Storage	A NIOSH Method	7400 Nas	tos _					
□ Vibration Sensitive □ OSHA Method								
☐ Hand Carry Only	Other							
CHAIN OF CUSTODY		LABORAT	DRY				· —	
RECEIVED BY RELINOUISHED		טג עו וייייי	BURN IH I	.AB		OTHER	./	
Vu thigh I Va thigh	1 63/11 1	ROY	ROY F. WESTON INC. 1635 PUMPHREY AVE. AUBURN. AL J6830 ATTN: BRIAN BENSON					
Shannon Blow / FED 8X		AUBI						
A.Murph Brian Ben	ison 13.18.961 16	DOO ATTA						

SV:C:\INDHYG\HDATA_FRM

*Note This C.O.C.'s information does not belong with any of the four cannisters sent. Also, one of the four cannisters is missing a C.O.C.

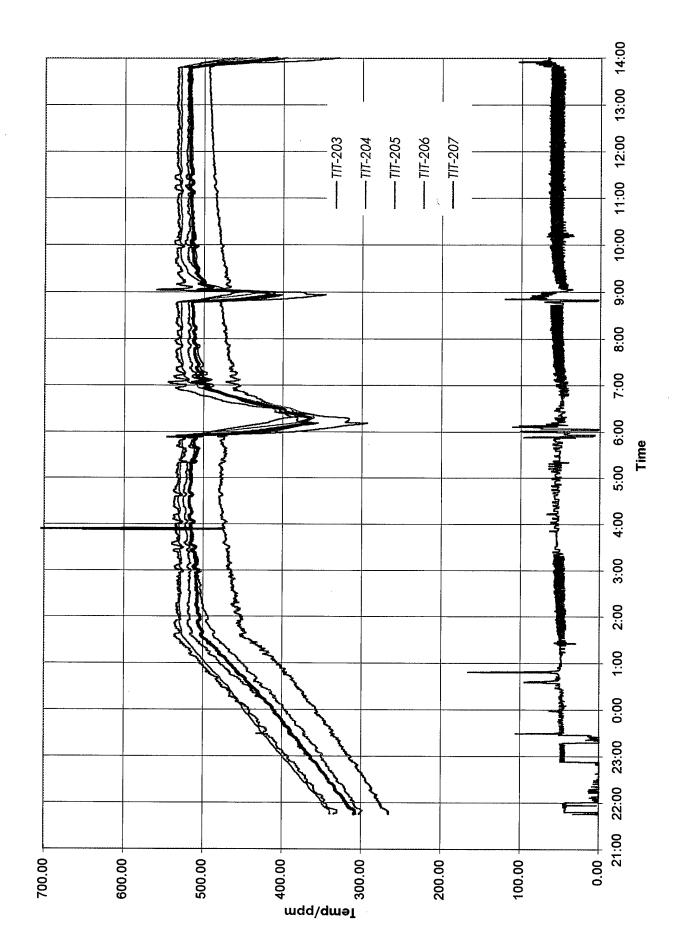
INDUSTRIAL HYGIENE SAMPLING DATA

CLIENT: USAE	,	WORK OR					7999-00	
PROJECT LOCATION: AAAP DATE: 03 il 96		SAMPLE NUMBER: A FIELDIBLANIC						
DATE: 63/11/96		HYGIENIST: LOTH 9-028				-028		
PUMP CALIBRATION DATA			Date	C.Time	Vol	E.Time	Flow	
PUMP ID		Initial						
CALIBRATION METHOD		CAL.						
☐ Bubble Burette ☐	Critical Oriface	Final CAL.					~	
Precision Rotameter		Cruc.	L		L	l		
☐ Field Rotameter		MEAN FLOW:						
SAMPLING MEDIA								
Adsorption Tube Cassette Other								
☐ Charcoai	37 mm 2 0.8 μ	m						
☐ Tenax	□ 25 mm □ 0.4 μm							
☐ Silica	☐ MCE ☐ Open			(Ty pel		/		
	PVC Std. (Cowl						
MPLE TYPE Ambient								
PUMP OPERATION START TIME:	2ND START:	TO	TAL TIME:	,	_			
STOP TIME:	2ND STOP:	VOLUME.						
SAMPLE MANAGEMENT HANDLING ANALYTICS ANALYTES Cold Storage NIOSH Method 4400 Abocks Vibration Sensitive OSHA Method Hand Carry Only Other								
CHAIN OF CUSTODY		LABORATO	RY	·				
RECEIVED, BY RELINOUISHED BY	DATE TIME	_			u			
Vu Huyuh Vu Huyuh	03/11/2 1800	AUBURN IH LAB ROY F. WESTON INC.					1/0	
Shamm Blor 7ED EX	03-13-96 1600	ROY F. WESTON INC. 1633 PUMPHREY AVE. AUBURN. AL 36830						
A. Murph Brian Benson		ATTN: BRIAN BENSON						

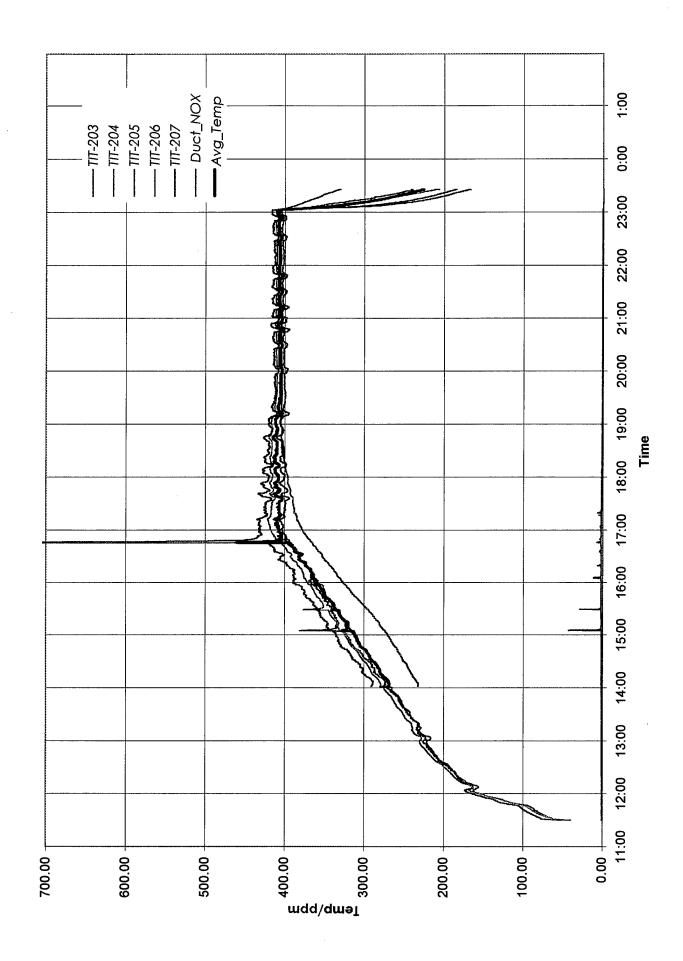
APPENDIX L

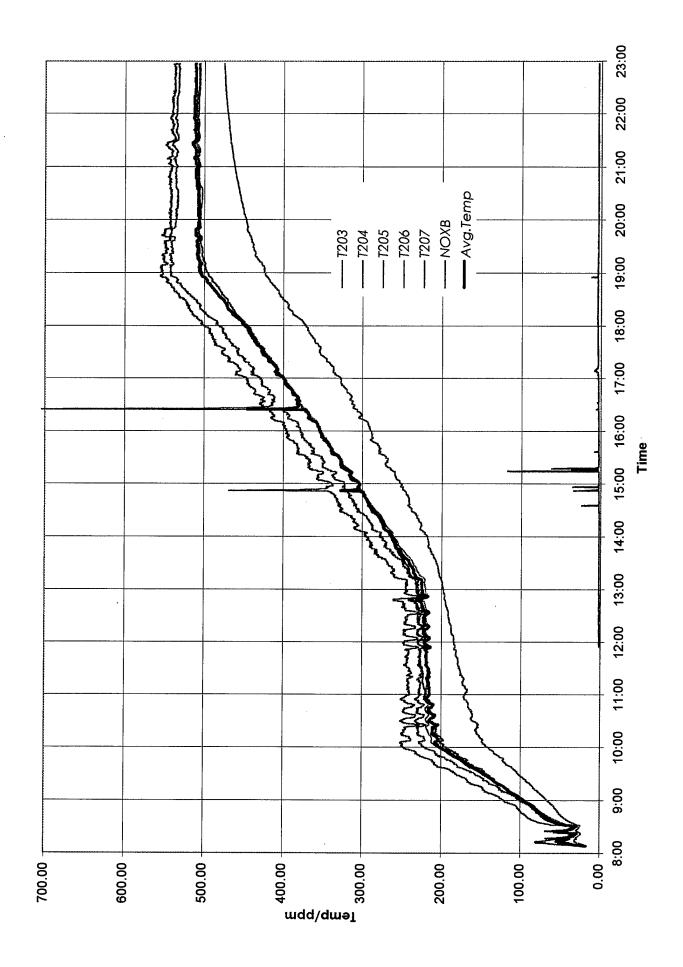
NO_X EMISSIONS TRENDS IN THE FURNACE EXIT GASES FOR TEST RUNS 1-15

TEST#1: NOx and Temperature

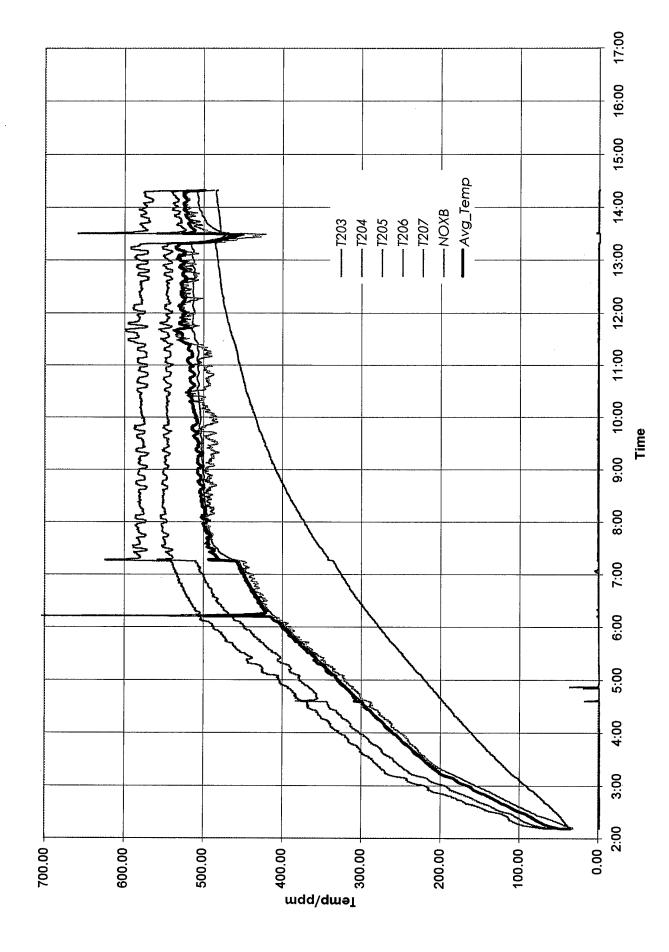


Page 1



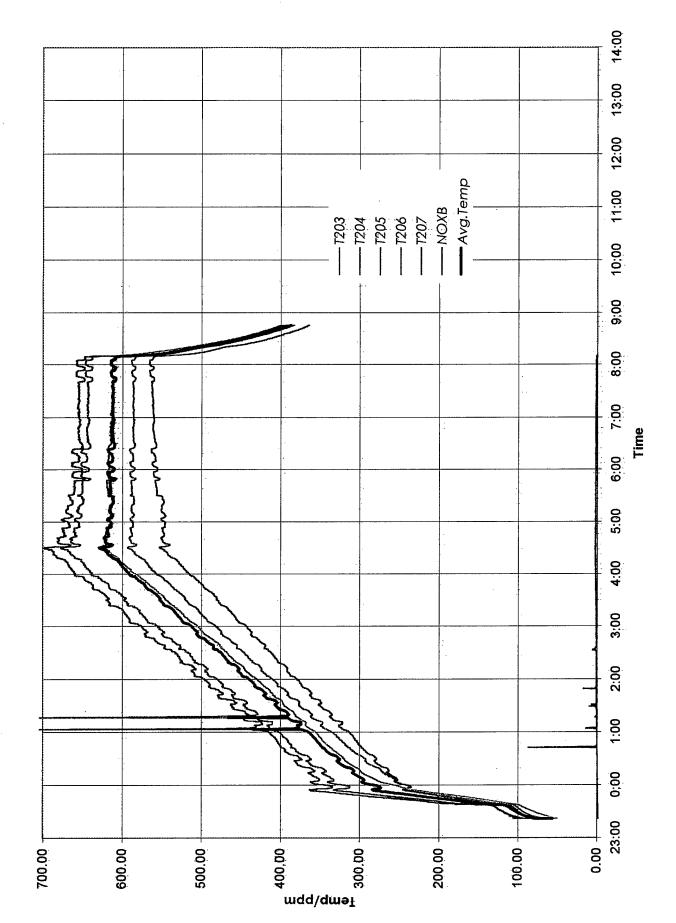


TEST#4: NOx and Temperature

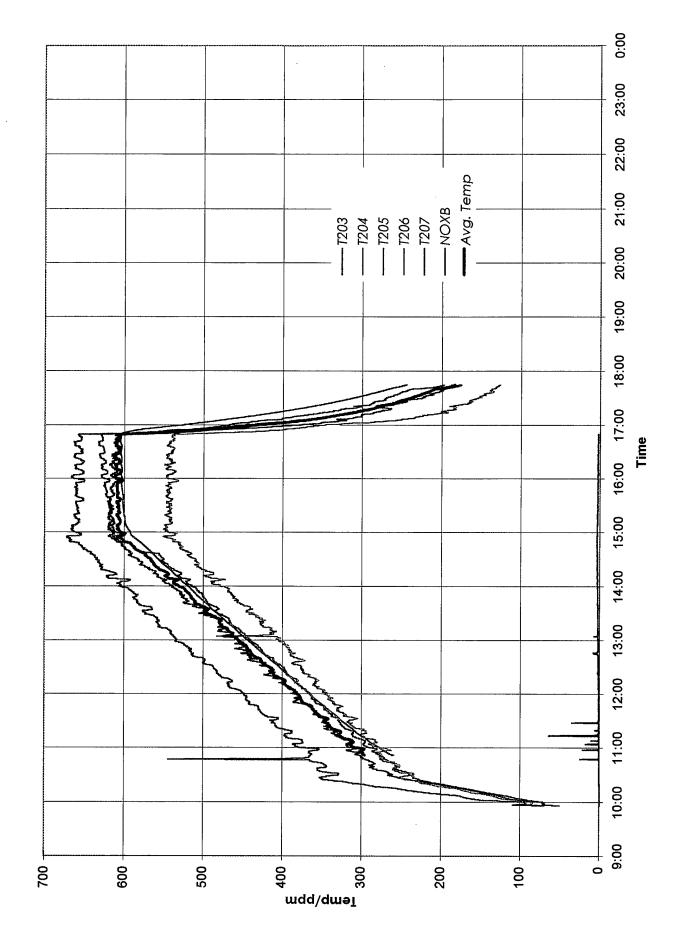


Page 1

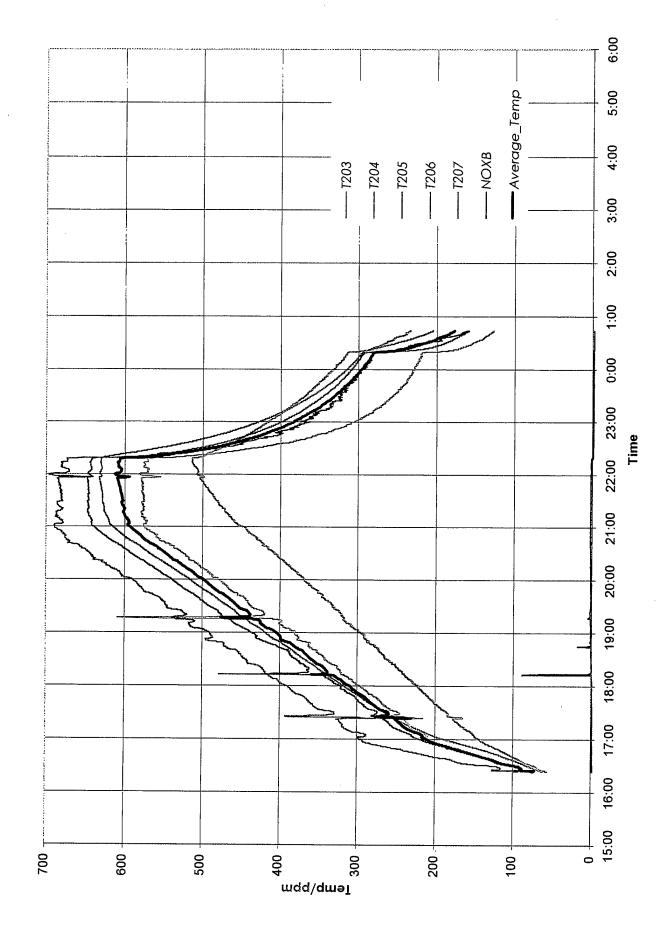
TEST#5: NOx and Temperature



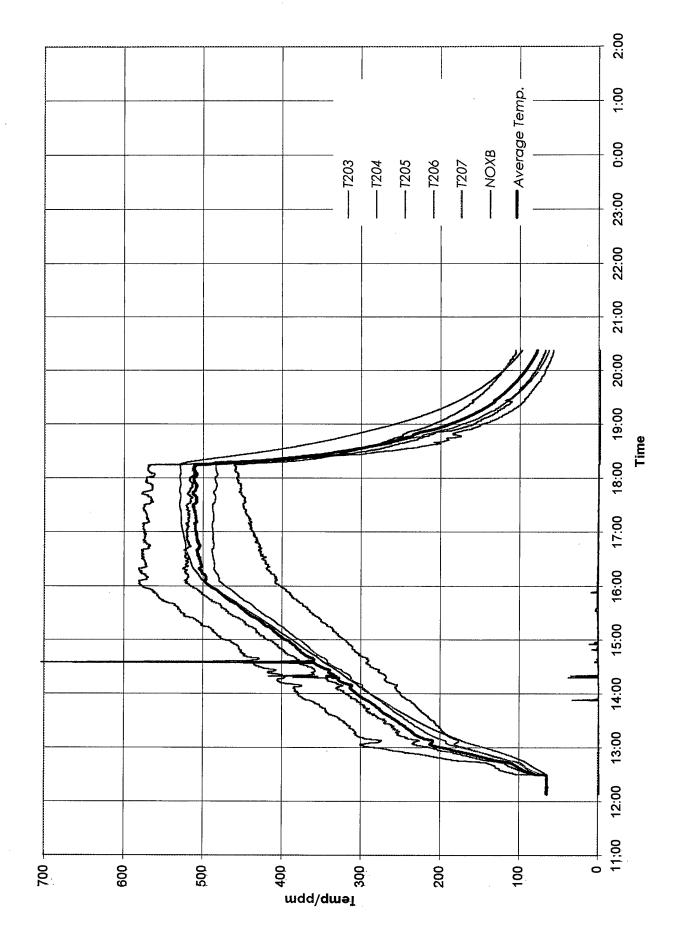
TEST#6: NOx and Temperature



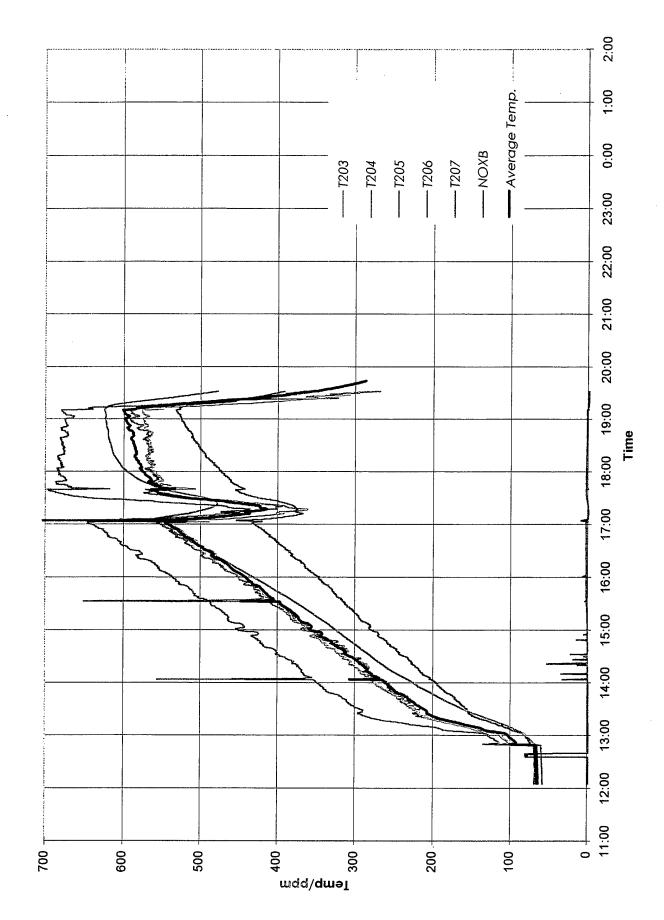
TEST#7: NOx and Temperature



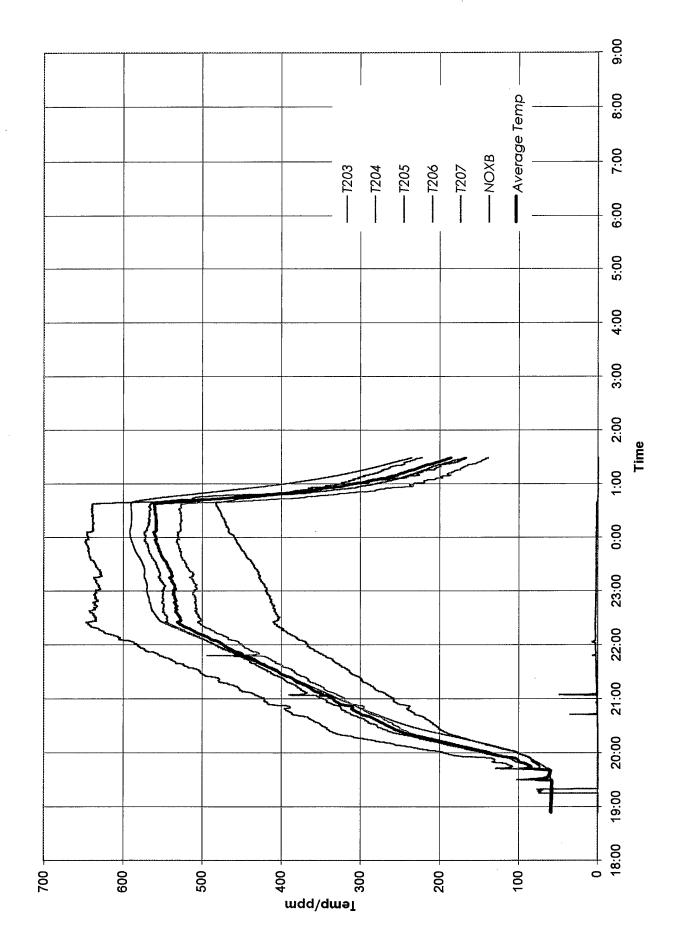
TEST#8: NOx and Temperature



TEST#9: NOx and Temperature

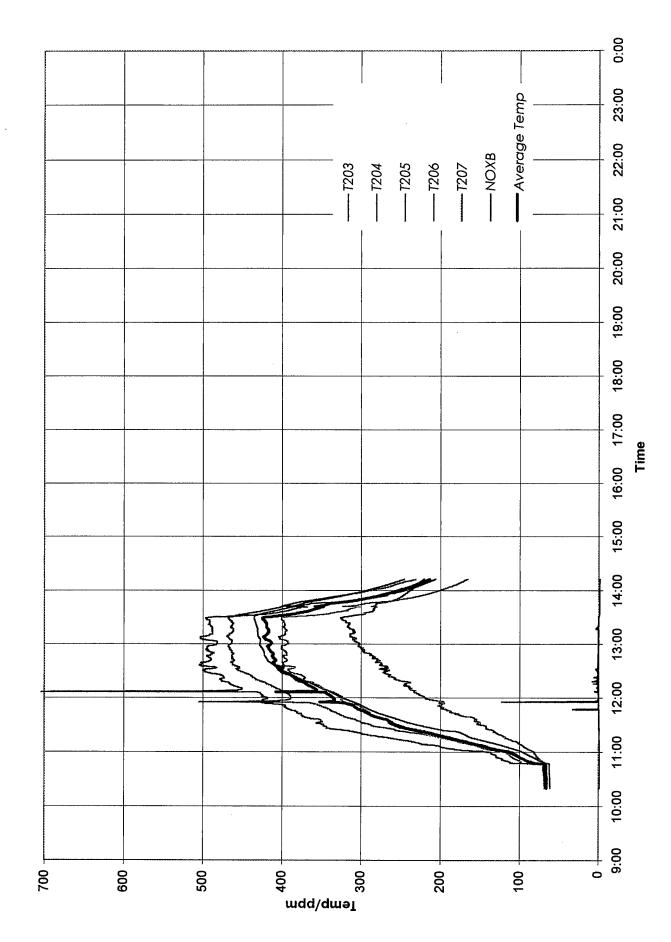


TEST#10: NOx and Temperature



3/4/96

TEST#11: NOx and Temperature



TEST#12: NOx and Temperature

